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AUTHOR Van der Vynckt, Susan, Ed.; Sachs-Israel, Margarete, Ed.

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ABSTRACT

This document contains papers presented at a seminar that examined the Home Economics curriculum at Kenyatta University (Nairobi, Kenya) in the context of Kenya's new educational system. The seminar studied themes of nutrition and health, child development and care, and rural development. Working groups prepared reports on each of these themes. Papers on nutrition examined food production in sub-Saharan Africa; food utilization; food preservation; and a learner-centered approach to nutrition and health education. Papers on child care reviewed the topic of child development; discussed the development of child care resources; and offered an overview of preschool education in Kenya. Papers on rural development addressed topics of: (1) population growth; (2) local involvement in community development; (3) the contribution of new technologies to the satisfaction of family and community needs; (4) income-generating activities; (5) family resource management; and (6) ways in which home economics education can improve people's lives. References are provided with individual papers. Appended materials include lists of participants in the seminar and the three working groups; the reports of the working groups; information on Kenya's educational system; information on the curriculum and proposed bachelor's degree program of the Home Economics Department of Kenyatta University; and a proposal for the establishment of a faculty of Home Economics at Kenyatta University. (BC)

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International Seminar Report

CURRICULUM REORIENTATION IN RURAL DEVELOPMENT
IMPLICATIONS FOR HOME ECONOMICS

edited by

Susan Van der Vynckt, Ph.D. and Margarete Sachs-Israël
with the Department of Home Economics
Kenyatta University
Nairobi, Kenya

Division of Education for the Quality of Life
UNESCO, Paris
July 1991

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Since January 1989, UNESCO has been supporting the development of the Department of Home Economics at Kenyatta University, Nairobi, Kenya. Through funding support from the Federal Republic of Germany (BMZ) and the Arab Gulf Funds (AGFUND) activities are focussing on the improvement of the teaching and learning environment and the development of human resource capabilities.

The Department of Home Economics and UNESCO, convened an international seminar on CURRICULUM REORIENTATION IN RURAL DEVELOPMENT: IMPLICATIONS FOR HOME ECONOMICS in February 1990. The seminar discussed curriculum development and suggested ways and means of integrating important development issues into the syllabus of the training programme at the Department of Home Economics. This publication is a compilation of the discussion papers presented at the seminar and summary of the suggestions of the seminar deliberations.

Special appreciation is extended to Professor Ruth Oniang'o (past Chairperson of the Department of Home Economics) and Dr. Julia Gitobu (Chairperson of the Department); the resource persons for the preparation and presentation of the background papers and all the seminar participants. We thank Professor P. Githinji, Vice-Chancellor of Kenyatta University and Mr. R. D. Wambugu, Deputy-Chief Inspector of Schools, Ministry of Education, for their support. We also thank Mr. Chacha-Ogwe, Secretary-General of the Kenya National Commission for UNESCO and his colleagues Ms. C. Kiara and Ms. R. Masya for their input and interest. We appreciate the help and assistance received from those at the UNESCO Regional Office in Nairobi (ROSTA). We acknowledge computer assistance provided by Ms. Laurie Chamberlain for the preparation of this document.

UNESCO, Paris
June 1991

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VII. Proposal for the Establishment of a Faculty of Home Economics (and the Departments of Family Environment, Home Economics Education, and Food, Nutrition and Institutional Management)

Opening and Objectives of the Seminar

The Chairperson of the Department of Home Economics, Kenyatta University, **Professor Ruth Oniang'o**, welcomed Kenyan colleagues and those from the many other countries to the seminar on *Curriculum Reorientation in Rural Development: Implications for Home Economics*.[1] She indicated that the main task of the Seminar was to examine and assess the present training curriculum of the Department of Home Economics at Kenyatta University within the context of the goals and objectives of the new 8-4-4 educational system in Kenya.[2] An innovation in the 8-4-4 system is the presence of *home science* as a compulsory subject for all pupils in the primary education curriculum and as an elective subject in the secondary school curriculum. Traditionally, the Department of Home Economics at Kenyatta University has trained secondary school teachers and teacher trainers; however, within the new educational system, the Department will play an important role in shaping the development of relevant and practical *home science* teaching-learning in primary education as well as in secondary education and teacher training.

The Director of the UNESCO Regional Office for Science and Technology in Africa (ROSTA), Nairobi, Kenya, **Mr. Pascal Lissouba**, underscored the timeliness of the present Seminar. New concerns for extending and improving the quality of primary education and making it more relevant to real life is in the spirit of the *"education for all"* approach to meeting basic learning needs as well as that of the new 8-4-4 educational system in Kenya. With *home science* as part of all children's primary education, those responsible for preparing teachers and trainers in home economics will guide innovative curriculum development. The challenge will be to create learning environments in the classroom that can offer children and young people meaningful knowledge and skills which will contribute to qualitative improvements in their daily lives.

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[1]As of January 1, 1991, Professor Ruth Oniang'o assumed a new position as Director, Board of Postgraduate Studies, Jomo Kenyatta University College of Agriculture and Technology, Nairobi, Kenya. Dr. Julia Gitobu is the new Chairperson of the Department of Home Economics at Kenyatta University.

[2]In the 1980s, Kenya introduced a new educational system, known as the 8-4-4 system. The structure of this system includes 8 years of primary education, 4 years of secondary education and a minimum of 4 years of university education. For a full description of the organization of the 8-4-4 system see ANNEX IV.

Professor Philip Githinji, Vice-Chancellor, Kenyatta University, in his official opening address on behalf of the University, said that he was especially pleased that this Seminar was organized with UNESCO as part of training development activities of the Kenyatta University/UNESCO Project on **Human Resource Development -- Emphasizing Nutrition, Health and Community Development**.

The rapid increase in enrolment at the Department of Home Economics which has come about with the introduction of the education reform has created human and physical stresses. The UNESCO-supported construction and renovation works at the Department have helped to ease crowding and, more importantly, opened the door to greater opportunities for training and practical learning experiences.[3] With the facilities more amenable to the teaching-learning process, the Department is rethinking the existing curriculum within the broader context of the educational situation in Kenya and the new directions for education established in the 8-4-4 reform.

On behalf of the Kenya National Commission for UNESCO, **Mr. Chacha-Ogwe**, Secretary-General, appealed to leaders in the field of home economics in the country to provide to the Ministry of Education technical expertise and guidance in this area which is intimately concerned with quality of life issues.

Organization of the Seminar

With the emphasis on meeting the learning needs of all through *"education for all"* and the high priority given to curricular relevance in the 8-4-4 system, it was decided that the Seminar should provide an opportunity for reflection and exchanges on the conditions of life in the rural areas where the majority of Kenyans live and on ways in which home economics education can contribute to improving life in the countryside. Three main themes were identified as the basis for initiating

[3]The traditional home, for example, is designed for students to spend time living in a rural home and experimenting with use of appropriate household technologies.

discussion on relevant curriculum design: nutrition and health, child development and care and rural/community development. For each of the themes, a series of background papers were presented as a starting point for discussions. Most of the Seminar was spent in working group deliberations to reflect on key issues and on ways and means of incorporating such issues into curriculum development work and the teaching and learning taking place at Department of Home Economics. Each of the working groups prepared a synthesized report of their discussions which appears in ANNEX III.

Seminar Presentations

The first series of presentations looked at questions relating to the nutrition and health conditions of different communities in Kenya. **Ms. Hilda Kigutha**, Chairperson, Home Economics Department, Egerton University, Njoro, Kenya, in her discussion of food production in Sub-Saharan African in general and more specifically in Kenya examined food availability and production on macro- and micro-levels and drew attention to the importance of understanding the interactions on both levels within the social and economic context. Rural Kenyan women can devote high proportions of their time and energy to food production. Can home economics extension-related activities offer the means to ease food-related tasks while at the same time enhance home-level food productive capacity?

In her discussion, **Professor Ruth Oniang'o** emphasized household food security and insecurity. She examined staple food production versus cash-cropping and implications for the nutritional status of the more vulnerable groups. She discussed serious problems of food losses and called upon home economists to better understand reasons why some families have access to enough food and others do not. With resources available at the family-level, what can be done to improve family food supplies (e.g., techniques to reduce high food wastage through spoilage)? **Dr. Florence Dovlo**, Nutrition and Food Utilization Consultant, addressed this question and offered an overview of technologies that have been developed for food processing and preservation and actually tested in rural areas of Africa. Dissemination of these techniques should be considered in curriculum development starting at the primary level.

Understanding the reasons for undernutrition and ill-health is the first step in the development of nutrition and health education that is realistic and relevant. **Ms. Penina Ochola**, African Medical and Research Foundation, (AMREF), Nairobi, discussed the learner-centred approach to curriculum development in this area. What are the problems and what are the means available to address them? Generating self-reliance becomes an underlying principle.

The second series of papers focuses on the young children and pre-school educational opportunities. **Professor Julius Meme**, Professor of Paediatrics and Child Health, University of Nairobi, provided a comprehensive review of the phases of child development and an appreciation for the complexity of interactions that take place between the child and his/her environment during the early growth and development phase. **Dr. Barbara Koech**, Department of Educational Psychology, Kenyatta University, made child development and the home environment centre stage for the planning of child care resources (physical and educational) and **Ms. Margaret Kabiru**, Coordinator, National Centre for Early Childhood Education, (**NACECE**), Kenya Institute of Education, offered an overview of Kenyan experiences in the area of pre-school education. All three presenters raised important issues relating to the role of pre-school education in enhancing equity in educational opportunities for disadvantaged children. Recognizing the wide disparities that exist between pre-schools in urban and rural areas, what contribution can teacher trainers and curriculum developers in home economics play in the conceptualization of pre-school education as part of universalizing access and promoting equity in education?

Without a clear understanding of the life context of children, youth and adults in rural Kenya, curriculum planning for relevant education is not possible. The five presenters of rural development papers touched on different aspects of rural life; they provided a range of ideas for improving training activities. For those who will be contributing their technical expertise to Ministry of Education efforts in extending education and improving the quality of education in rural areas, it is important to maintain direct contact with rural communities. Educational content in *home science* may vary from one part of the country, province or district to another. Recognizing the diverse needs of learners is key to the expanded vision of *education for all*.

Ms. Grace Maina, Senior Agricultural Officer (Home Economics) and Head of Rural Youth Branch, Ministry of Agriculture, created an element of realism in her discussion of the implications of population growth to rural development efforts. Home economics is central to family life and can provide the foundation for effective family life education in primary and secondary education. **Dr. Paz Lutz**, Technical Adviser, United Nations Development Programme/World Bank Community Development Project, Nigeria, drew attention to people's involvement in community-level development efforts. From experiences in other African communities, she underscored the centrality of community participation in community development initiatives. **Dr. Raphael Kapiyo**, Appropriate Technology Center, Kenyatta University, discussed how technologies that are appropriate to family and community needs can contribute to a reduction of labour and energy expenditures and improve productive outcomes. Appropriate technologies are natural themes for relevance-based and practical teaching and learning. **Dr. Julia Gitobu**, in the same line, focused on income-generating activities to promote self-reliance and self-employment both of which are important objectives of the new education reform. How can these notions be integrated throughout the primary and secondary curriculum to equip learners with the entrepreneurial spirit? The theme of family resource management covered by **Dr. Olive Mugenda**, Senior Lecturer, Kenyatta University, is also central to home economics. How can families make the most of their resources? **Professor Maria Thiele-Wittig**, University of Duisburg, Federal Republic of Germany, discussed the home in the rural areas and ways in which home economics teaching and learning at different levels can incorporate elements of improving the living conditions of people.

FOOD PRODUCTION

by
Hilda Kigutha[1]

INTRODUCTION

A major concern of today's world is how to feed the rapidly increasing population which creates an ever-growing pressure on available world resources. Although the poor almost everywhere are exposed to food shortages and undernutrition, the major hunger zones of the world are found in the developing world. The attainment of good nutrition and health for all in developing countries is conditioned by socio-economic factors such as poverty, illiteracy, prevalence of communicable and parasitic diseases, inappropriate eating habits and high fertility. Added to these factors are problems brought about by rapid economic progress. Urban development has widened the gap in living standards between rural and urban centers and the increase in rural-urban migration has resulted in reduced food production. Common food shortages due to drought and the inflation of consumable goods have made the situation worse and deepened the balance of payment problems in these countries. In such a situation, most countries have opted to invest in efforts focussing on large-scale preventive measures in areas where visible benefits are likely. Among some of the main activities being undertaken are expansion of primary health care, systematic treatment of endemic diseases, improvement of food production techniques to boost agricultural yields, modernization of crop storage for national food security, and population control measures.

Food production is currently a major concern to most countries in sub-Saharan Africa, including Kenya. The food production rates have constantly lagged behind the high population growth rates which are expected to double in the next twenty years or less. There is, however, little hope of ever doubling the food production within the same time span, and there is no doubt that the food crisis will continue unless drastic measures are taken.

Development problems facing most countries in Africa are basically agricultural in nature. The major causes of these problems have been: non-commitment to agriculture by most governments; dependence on foreign aid and food aid; unfavorable climatic conditions; inappropriate agricultural policies such as those which favor cash crops at the expense of food crops; domestic food policies which favor urban consumers; and general negligence of infrastructure and services that would enhance and sustain agricultural production and rural development.

Hunger and undernutrition are multi-faceted problems and their eradication or control require multi-faceted approaches. The food problem is, in part, a problem of income levels, in part a question of improved agricultural production, and, in part an issue of the rate at which the population is growing. The root cause of undernutrition

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[1]Chairperson, Home Economics Department, Egerton University, Njoro, Kenya.

and hunger in Kenya and other countries in the region lies in socio-economic under-development.

Addressing food production problems involves changes in agricultural technology and human behaviour. It is in this regard that one can appreciate the potential role of the home economics profession. One of the ways of solving the food production is through development of human capital and managerial skills, produced by investments in training programmes (e.g., in agriculture, home economics, etc.). It is appropriate and necessary to review regularly curricula in these areas in order to meet the ever-changing needs and expectations of those they are expected to serve.

FOOD AVAILABILITY

The amount and variety of foods consumed in a geographical area depend in part on food availability which depends on a host of factors such as the quality of the farmland; availability of land to grow food crops; water and climate; access to farm labour; money to buy or pay for capital inputs such as fertilizers, machinery and labour; and the availability of professional expertise to help farmers increase production and ensure equitable distribution of food. Before adequate food production and distribution can be affected, serious attention needs to be given to the following:

a) More productive agricultural methods

A fundamental step towards increasing the amount and variety of food needed to provide people with adequate balanced diets is the development and application of agricultural methods that are both practical and scientifically sound. Some of the agricultural practices that are adapted from farming procedures already in use are usually more successful than imported and unfamiliar practices. Practical mixtures of traditional and more modern scientific techniques are likely to stimulate farmer participation and encourage adoption. Agricultural practices that can be employed to increase food production are: use of fertilizer/manure; use of fast-growing, disease-resistant and productive varieties of crops such as the hybrid maize (corn) grown in Kenya; appropriate choice of grains and legumes of relatively high protein content; safe and effective use of pest and livestock disease control methods for both crops and livestock; intensive animal husbandry programmes with emphasis on small animals for home consumption by small-scale farmers; farming through irrigation projects where natural water supplies are inadequate, etc.

b) Land quality and amount

The quality of the land is determined by soil fertility and type, availability of adequate water and good climate. Unfortunately, some good soils have been rendered poor by certain farming techniques employed in different areas. For example, commercial fertilizer application alone will increase crop production but will not improve soil quality. For small-

scale farmers, farmyard manure and home-made compost would be a better alternative, since these methods increase crop yields while improving soils. However, even if land productivity is increased by use of certain farming techniques, the upper range for crop yields on a given plot of land has its limits.

In Kenya today, the amount of land available for food production is small; only 20 per cent of the country's land area is of high production potential. The remaining 80 per cent of the land area is arid or pure desert, currently referred to as "wastelands". Much of the high potential agricultural land is being used for cash crops (e.g., the production of tea, coffee, sugar cane, cotton, pyrethrum and cashew nut). The land reserved for food crops is very small and must meet the food needs of Kenya's fast-growing population. Farmers growing food crops must be taught how to maximize production per unit of land to the upper limits without sacrificing the variety of the foods grown. Furthermore, the Government must find ways and means of developing the semi-arid areas through irrigation programmes for food production.

c) Cropping patterns

The amounts of different foods produced and the seasonal production patterns affect the nutritional status of families living at the subsistence level. In the rural areas, families depend on what they grow for their food. Where only one or two subsistence crops are grown, the effect of poor diets is directly reflected in the nutritional status of household members, especially the most vulnerable family members (e.g., young children and women of reproductive age).

Cropping patterns are determined by regional geographic patterns of rainfall, temperature and soil types, and what can be grown in one region may differ from another region. It is important that farmers be encouraged to improve on crops already adapted to a particular climate, including traditional food crops. The aim should be to increase yields to meet family food needs until the next harvest. In most subsistence farming communities, there is often a "hungry" season which starts a few months after a harvest and lasts until the next harvest. The "hungry" season coincides with a period of intensive labour, needed for land preparation, planting and weeding for the new crop.

One method of helping to sustain availability of food throughout the year is through simple cropping patterns in places where climatic conditions allow for it. Inter-cropping of two or three types of food crops also serves to improve soils and to provide extra food sooner, especially when short seasonal crops are grown. A good example of inter-cropping is when maize is inter-cropped with beans, peas or other leguminous food crops. Potatoes and other vegetables could be grown on a separate patch

of land. As beans and other legumes as well as vegetables take only three to four months to mature, they can serve as the main diet for families while awaiting the major staple food to mature. This cropping pattern reduces the "hungry" period. A multiple cropping system may be used on a farm plot to produce more than one crop each year of the same food crop or sequential crops of a variety of foods. [This practice is already being used by small farmers in the rural areas of Kenya.]

d) Mixed farming

Another farming method that can be encouraged is mixed farming. For this method, a farmer keeps some livestock on one part of the farm and grows food and/or cash crops on the other. The type and number of livestock kept are determined by the size of the land and the climate. Dairy cows are well-suited to the cooler climates of Kenya's highlands. For very small farmers, store feeding, commonly known as "zero grazing", has become very popular. Besides providing milk for the family, the remaining milk can be sold for cash. Other livestock enterprises that can be encouraged are poultry, rabbit, and pig-rearing. Rearing these animals has several advantages: they require very little space, reproduce very fast, and convert farm and kitchen wastes into valuable manure for recycling into the soil to increase crop yields.

e) Food storage

The main staple food crop in Kenya is maize. Farming and rural communities often depend on maize and beans as the staple meal. Maize is only harvested once in the main maize-growing regions of the country. Where it is planted twice, the yields are usually very low. The manner in which harvested maize is stored and processed is crucial and determines the amount of household food from one harvest until the next.

f) Locality

The farmer's accessibility to agricultural advice, roads, transportation, markets and farm supplies such as seeds and fertilizers is important to production. Many rural villages are so remote that they depend only on what food is available locally. People who live near rivers, lakes and the sea have access to fish. The presence of livestock diseases may severely limit meat and milk production in some regions. With good agricultural advice and planning, those residing in remote areas would be able to grow a variety of foods to meet their nutritional needs.

g) Incentives to produce

Socio-economic and political conditions which affect rural development are also key determinants in food production. Motivation to increase food production is often hindered by inadequate marketing facilities. If credit programmes are not available, or if loan requests are not handled punctually, farmers may be unable to adopt improved methods of

production due to lack of funds to buy the needed farm inputs. Low pricing policies of food crops; inaccessibility to farm supplies including livestock feeds, non-payment or delayed payments of delivered produce; and, high price of inputs and poor roads and transport systems are some of the other major factors which reduce the incentives to produce. A stabilized production and marketing system which takes into consideration all these factors serves to encourage farmers to increase farm production of food crops and livestock.

h) Income levels

In general, as the level of income of a family rises, the amount and variety of the diet tends to improve. However, the quality of the diet may not always improve when a cash crop is introduced. The cash crop tends to replace production of food for household consumption by taking much of the available land as well as labour. Furthermore, the income earned from the cash crop may not be used to buy food or foods of good nutritional quality. Cash crops do provide income for the family to meet other financial obligations such as contributions to school development funds, medical charges, housing, clothing and other family needs. They also earn the country's much-needed foreign exchange. However, agriculturalists need to assist farmers in balancing farm enterprises so that there is room for cash crops, food crops and livestock. Extension agents also need to assist farmers in making wise decisions on how to utilize income from cash crops so that additional foodstuffs may be purchased to help balance the family diet. If adequate knowledge of nutrition is given to farm families, cash cropping need not necessarily interfere with good food practices. This implies that nutrition education should be an important part of the agricultural extension programme. This, in turn, implies that the curricula for agriculturalists, economists and those working in rural development should incorporate aspects of food and nutrition.

FOOD DIVERSIFICATION

Food diversification can be defined as the production of several food products at the same time, or the production and sale of the same food at several different times of the year. In both instances, more food and a larger variety of it are available for consumption. The nutritional quality of a community's diet is improved when a variety of food is eaten. Therefore, rural communities who depend on what they grow for their daily food need to diversify their food crops. In determining what foods should be encouraged for planting, or what other alternative sources of foods are needed, it is important to assess the types of deficiencies that exist in a community or region. In most African countries, much of the food eaten comes from food sources high in carbohydrates and low in fat. As such, large amounts of foods must be consumed in order to meet energy needs. Young children have difficulties in eating large enough amounts of carbohydrate-rich plant foods to meet body demands for

energy. Since fat provides more than twice as much energy, weight for weight, as does carbohydrate, food diversification programmes should include more legumes, nuts and oilseeds. In Kenya, these foods have been neglected by agriculturalists who promote cereals and cash crops.

Another major deficiency in the diets of most people is protein of high biological value. Most of the protein consumed is derived from plant sources and the staple foods commonly eaten are fairly low in protein. The food producers - especially the small-scale farmers (who form the majority of farmers in Kenya and other developing countries), need to be encouraged to diversify in both food crop and animal production.

Small domestic animals are of interest in respect to the current level of development and land shortage. These include chickens, pigs, rabbits and fish. The latter is ideal in fish pond farming where fresh water is available. As mentioned earlier, these small animals have several distinct advantages over the larger domestic animals: they provide high quality protein to the family's diet to supplement what is available from plants; they are able to reproduce very fast (one female rabbit can produce as many as sixty-four young ones within a year); they require very little land; they eat little and can be sustained on feed obtained from the land; they convert farm and kitchen waste rapidly into high quality manure for recycling into the land (except fish); and children are able to share in the feeding, thus releasing the adults, especially mothers, for other duties.

The large domestic animals such as dairy cows can be encouraged for small farmers. However, care needs to be taken when advising farmers to start the dairying enterprise. The type of climate and availability of food and water need to be considered, as well as the ease in marketing the milk. When zero-grazing is adopted by a small farmer who lacks the above facilities, much of the family's daytime hours are directed to the needs of the dairy cows, at the expense of the other family needs, including preparing meals and taking care of the children. Women, men and children can be observed walking long distances every day (often before breakfast) in search of fodder for the animals, and even more time may be spent on fetching water. If the animal is producing milk, many hours are spent at milk collection centers each morning. In most instances, however, the disadvantages of keeping the cow far outweigh the advantages. It may be easier and cheaper to buy the milk for family use from a neighbor rather than to produce it if the land size is unsuitable to sustain the cow.

In an effort to promote the keeping and eating of small domestic animals or their products, farmers and villagers need to be taught modern ways of rearing these animals to maximize production. They also need to be shown preparation methods of new foods to get maximum nutrition and palatability. New or unfamiliar foods can be promoted more easily through schoolchildren and youth in the local community. Young people are known to more readily accept new foods than adults. Furthermore, the newly acquired habits will also be sustained up to adulthood if they are properly promoted. Another method of promoting production of new foods is the establishment of demonstration units in primary and secondary schools and at marketplaces. Cooking demonstrations may also be useful at harvest time in the same venues.

WOMEN IN FOOD PRODUCTION

Women provide more than half of the farm labour in the developing countries. They produce most of the food used for household consumption and for sale in the local markets. In most African countries, women are involved in the entire spectrum of the farming systems; they clear the land, plant, weed and harvest. In addition, women do most of the post-harvest food processing and almost all the family food preparation. Over half of Kenya's population are women. These women are involved in all phases of agricultural production, petty trade, small-scale enterprises, public service, as well as managing families and carrying out their day-to-day household chores. The economically active female population in the rural areas is higher than that of men. One reason for this relates to the growing exodus of men to the urban centers in search of steady jobs, leaving their women behind in the countryside to look after the children, homes and farms. This male migration has resulted in farm work and food production increasingly being left in the hands of women, yet, with all this involvement, rural development programmes generally do not encourage the participation of women. Where they do, women often are not included at the planning stages. Rural women, no less than men, have considerable experience of wrestling a living, no matter how meager, from the land and other resources at their disposal. At times, misdirected research efforts have led to incorrect or inappropriate practices being recommended to improve a situation. Where women are already more than fully employed, projects that require additional time are unlikely to be successful. It is interesting to note that even with the current unemployment level in Kenya, shortage of labour has been identified as the principal constraint to increased agricultural and food production.

Agricultural extension and training programmes in many African countries have been directed almost entirely at men. Since women are so heavily involved in agricultural production, women as well as men should be included in rural development and agricultural extension programmes and training. In Kenya, agricultural training for female extension workers at diploma level only began in 1969. This was offered at Egerton University, then a College of Agriculture. Soon after, a few women were admitted at Embu and later, Bukura Institutes of Agriculture. To date, very few women in the country have been trained in agricultural sciences.

Kenya is going through a process of dramatic change which is placing new demands on the female population. These demands are of a totally different nature from those of two to three generations ago. Individual ownership of land has become more prevalent. Cash crops are replacing traditional subsistence crops, and education and salaried employment have become crucial elements for family advancement. The situation has been made worse by the rapidly increasing population. All these changes are creating serious constraints to progress toward improving the condition of women.

In the farming communities, the key resources are land and labour. Individuals obtain the right to the use and ownership of land through a variety of mechanisms such as inheritance, occupancy, purchase, rental and squatting. Many families in the rural areas do not own land and the number of women who are able to purchase land is limited by poor socio-economic status. Rural families earn their living by serving

as agricultural labourers or by squatting on individual or government reserve land. For improved production of food to be realized, both men and women need to have access to land.

FEMALE-HEADED HOUSEHOLDS

In rural areas of Kenya, households headed by women are increasing and constitute more than 30 per cent of all households in the rural areas. In some districts such as Taita Taveta, parts of South Nyanza and Western province, the percentage of female-headed households may be as high as 50 per cent. Women become household managers through a number of mechanisms. The common one is the absence from home of the husband, who may have found employment in the urban centers. Although the husband, in this case, is the head of his family *in absentia* the wife does all the work and takes all the decisions concerning the farm and home for the greater part of the year. Another type of female-headed household is one where the husband has died, leaving the custody of the land, household and children to the wife. Another category is women who have children and have established their own households although they have never married.

Available data show a significant linkage between female headship of families and poverty. This poverty, combined with women's virtual exclusion from access to technical knowledge, literacy, credit, and market possibilities leaves them and their children more vulnerable to the changes in food production, food prices and decline in unemployment. It is, therefore, necessary for the training programmes in agriculture, home economics and other subjects concerned with rural development, to sensitize their trainees to the conditions and needs of rural women.

Agricultural or rural development personnel should not only be trained to help small farmers (women or men) to do better on their farms, but also to facilitate acquisition by these farmers of a more equitable share of the resources which they require to increase their incomes, output and productivity. Rural dwellers also need to have access to farming tools and instruments which reduce the drudgery of farm work and increase the efficiency of labour. For this reason, an extension agent should know what community and Government services and resources are available and how to obtain access to them. These Government resources and services include access to credit, land, markets and the technology and information needed to exploit them. Rural development workers should become facilitators so that the farmers have equal access to such facilities and services. To enable these facilitators to be effective, their training programmes should be able to train them to become sensitive to the situation and needs of small-scale farmers. The realization of the need to strengthen the home economics programme in order to address rural development issues is very timely at this point in Kenya's development. It is neither possible to separate agriculture and rural development when more than 80 per cent of Kenya's population lives in the rural areas, nor to ignore the role women play in food production, processing and utilization. The traditional home economics curricula depicted women primarily as homemakers but not as food producers. The new curricula should combine the many

roles of women and try to meet their needs through training competent extension agents. This is possible, though not easy.

Home economics professionals need to develop competencies if they are to effectively participate in rural development. Some of the important competencies that the curriculum could offer are:

(1) basic concepts of rural development, rural family life and the process of socio-economic change;

(2) the principles and techniques of small-scale animal and food crop production;

(3) constraints to women's effective participation in rural development and how to overcome them;

(4) the process of human development and the management of available resources to achieve better family life;

(5) programme development, planning administration, supervision and evaluation;

(6) the communication process best suited to rural areas; and,

(7) the population problems, issues, and family planning programmes and services available.

The inclusion of courses which will help develop these competencies and create awareness of the current rural development problems will, therefore, be ideal in this curriculum review process.

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FOOD UTILIZATION IN KENYA

by
Ruth Oniang'o, PhD[1]

INTRODUCTION

To discuss food utilization, one must start with the premise that food is actually available, regardless of its adequacy. Until the 1970s, the African continent was a net food exporter, but many problems have forced it to become a net food importer, triggering a crisis situation. A former president of the World Bank stated that "food security has to do with access by all people at all times to enough food for an active and healthy life" (**World Bank**, 1986). Yet it has been estimated that over 700 million people in the developing world lack the food for such a life. Many people on the African continent are included in this phenomenal number.

Traditional mechanisms that ensured food security have been threatened in almost every African country (**Mascarenhas**, 1988). These mechanisms consisted of growing a variety of food crops which also provided a food back-up during periods of cereals deficits; growing of drought-resistant crops; following a different agricultural calendar to ensure that one food or another was available at any given time of the year; having fields in several different locations in case of crop failure in one concentrated area; sharing and helping those in need; and migration to greener pastures. Although very few of the traditional cropping mechanisms were fool-proof, in that there were still periods of seasonal food scarcity, unexpected natural disasters and high infant mortality, starvation amidst plenty was rare. Very rarely, there were reports of families having been wiped out. Currently, traditional food security mechanisms have been threatened in nearly every African country, with devastating effects in some areas, and without better alternative measures at the community-level. Community food reserves no longer exist.

Current food security measures are at the macro-level, and their effects may not adequately filter to the community or household level. This has led to communities becoming undesirably dependent on the outside world for food supplies. Such supplies are usually more expensive than they would be if they were produced within the community, and require cash which may not be readily available.

On-farm food storage is almost becoming a practice of the past in many communities. Traditionally, food grains would be stored on the farm and would last until the next harvest; but now, the food produced on farms may be the only source of income and will be sold as soon as it is harvested, usually at depressed prices. Traditional stores have disappeared because they have become a risk and are prone to attack by thieves - whose numbers and aggressiveness have increased; and some of the hybrid grains farmers use, such as hybrid maize, require sophisticated methods of

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[1]Past Chairperson, Department of Home Economics, Kenyatta University, Nairobi, Kenya. Presently Director, Board of Postgraduate Studies, Jomo Kenyatta University College of Agriculture and Technology, Nairobi, Kenya.

preservation for them to last until the next harvest. Such measures of preservation are becoming increasingly expensive for the individual farmer.

Although in some instances, some of the traditional mechanisms have been integrated in national level food security programmes, the results of such a programme in many cases still do not address community-level food problems.

AFRICA'S FOOD CRISIS

Looking at much of Africa today, it is hard to believe that Africa has ever been in a position to export food. A number of factors have led to the rapid deterioration of the food security situation on the African continent. These include:

*** **Population growth**: a population growth rate which is much faster than the economic growth rate (during 1966-80, the total domestic utilization of basic food staples in sub-Saharan Africa was considerably lower than the population growth rate (**FAO**, 1982). In addition, in the last two decades, the population growth rates in much of Africa has far surpassed the economic growth rate.

*** **Seasonality effects**: seasonality effects such as transitory food insecurity in between harvests which is fairly common. Families are finding it increasingly difficult to store enough food, even if they harvested it, to last until the next harvest.

*** **Political strife and wars**: it is difficult to fully appreciate the positive impact on development of political stability until one gets first hand experience of a war situation. Parts of Africa continue to experience protracted civil war whose effects spill over to other African countries; the refugee situation is an example of the spill-over effect. People need peace and security to be able to produce food and carry on with development work, and to be able to earn an income to purchase food and meet other basic needs.

*** **Food reserves**: these are critical in times of crisis. A number of countries which are affected by natural disasters such as drought and floods, often do not have food reserves to see them through these periods. There is often lack of storage facilities to accommodate bumper harvests, which would be useful in crisis situations. Substantial food reserves are often suggested as a way to prevent famines. Food stocks need to be seen as a form of political security since it is not easy to govern "hungry" people. Admittedly, in a few cases food is stockpiled but it does not get to the target groups at a time when most needed; the reasons for this may be political or administrative.

*** **Infrastructure**: where national food supplies are adequate, there must exist an infrastructure to facilitate quick movement of food to areas where it is needed when it is needed. Marketing, storage, distribution, and pricing are all part and parcel of the infrastructure of ensuring that food arrives where it is needed on time.

*** **Rural-urban migration**: rapid migration of productive men from the rural to the urban areas has created a situation where a large majority of households in the rural areas are female-headed. With free and "compulsory" primary school education in Kenya, children can no longer be used to assist on farms the way they used to. Women alone, for a variety of reasons, are unable to produce enough food for sale as well as for family needs. It is estimated that about 75 per cent of Kenya's on-farm labour is provided by women (**Alumira**, 1988). This figure constitutes 27 per cent of female small holdings as real heads of households while 47 per cent represents women heading homes which their husbands have left in search of employment elsewhere. These young men travel to the urban areas where they believe there are better prospects of getting into gainful employment.

*** **Fluctuating incomes**: incomes are stable for very few households in developing countries, which tends to destabilize the socio-economic status of households affected. Food expenditures, for example, show similar deviations from the average. Only a very small percentage of the people enjoy a stable income over an extended period of time. Those who work as casual labourers and those with very low incomes often have to compromise the food budget in order to try and meet other family needs.

For Kenya, the most common causes of food insecurity include fluctuating incomes, low production, especially in female-headed households, seasonality effects and natural disasters such as drought and floods.

TYPES OF FOOD INSECURITY

Famines are the worst form of transitory food insecurity and have several causes: wars, floods, crop failures, insect invasions and low purchasing power by groups and households (**World Bank**, 1986). Those usually found in this category are:

--- small-scale farmers or tenants whose crops have failed and who cannot find other employment;

--- landless agricultural workers who lose their jobs when agricultural production declines or who face a rapid rise in food prices while their wages stagnate or fall;

--- other rural workers who are affected by a drop in real income;

--- pastoralists who get most of their food by selling their animals and are sometimes forced to sell their animals at depressed prices; and,

--- female-headed households where food production is minimal.

The identification of areas, and periods of stress and communities most vulnerable to food shortage is a first step towards famine management. Such identification is possible through examining changes in food consumption patterns to predict food shortages at the household level. For example, people may change the amount and frequency of eating and the variety of foods consumed. They may even change the type of food which they usually eat to something they have not eaten before or eat only during times of disaster. For intervention, emergency food relief measures are usually put in place in order to avert the possible devastating impact of transitory food insecurity. Governments require early warning systems or systems that are reliable to be able to detect the onslaught of these types of disasters that lead to transitory food insecurity. This is where national food reserves become essential. In severe cases, food may be airfreighted in as food aid from donor countries. Where such food aid consists of food that the affected populations are not accustomed to, then nutritionists and food scientists and even social scientists must be mobilized to advise on preparation and feeding and also to counsel the consumers to assure that the food is utilized. It is not always true that "hungry" people will eat anything. The administrative machinery must be effective, fast and free of corruption. We need to understand the coping strategies by households during periods of transitory food insecurity. Some useful data on this has come out of the CRISP project in Embu which was hit by drought in 1984 (**CRISP**, 1987).

Inadequate diets over a prolonged period of time can have far-reaching implications. Such poor diets increase vulnerability to disease and ill-health. They reduce strength for tasks requiring physical effort. They minimize the benefits from schooling and training programmes. They result in general lack of vigor, alertness and vitality. These outcomes ultimately lead to a cycle of poverty by reducing reproductivity of people in the short and long-term, sacrificing output and income, and thus retarding the economic growth of the nation.

A situation of chronic food insecurity is very dangerous, and must be avoided lest it be considered as the norm. To avert chronic food insecurity, a government needs to be fully committed to the alleviation of poverty and hunger. A government must view food as a basic human right, and effect measures to alleviate the suffering associated with food shortages and thus enhance its own stability and continuity. Policies that spell out strategies for increasing accessibility to food by those affected is a first step in the right direction. These documents must not, however, remain as mere blueprints, but should, rather, include a time-frame for implementation.

ACCESSIBILITY TO FOOD

Although increased food production is essential for meeting the nutritional needs of a society, it should be noted that increased production by itself will have limited impact unless there is concomitant equitable distribution of food to last until the subsequent harvest. We have to ensure that the most vulnerable groups have access to food. Special mechanisms should be worked out to ensure that those groups mentioned earlier who experience transitory food insecurity actually have access to food, either through food aid, subsidized pricing or supplementary feeding programmes. At the household level, we must ensure that women and young children benefit from a fair food distribution system.

Research conducted in Kenya by **Oniang'o** (1987) reveals that in traditional Kenyan homes, children are served food last. The special nutritional needs of children are often not recognized. Furthermore, children are often fed with leftovers. Traditionally, this practice may have been alright because food was plentiful. Leftovers at that time were wholesome foods and available in adequate amounts. Some contemporary researchers have talked against this form of feeding, claiming that it disadvantages children. Traditionally this was not true, but today it is, because with food being scarce, leftovers are non-existent, or when they exist, they are only crumbs!

The CRISP study which was undertaken during a severe drought actually showed that men lost weight more than women while children's weight stagnated, indicating that the men were just as hard-hit as the rest of the family; in fact, in some cases, the men had to forego food in favour of their children (**CRISP**, 1987). Research by **Oniang'o** (1987) also showed that the young generation is moving away from the mode of feeding as described above. The majority of the 15-35 year-old women interviewed reported that they either feed the children first or serve the family together.

KENYA GOVERNMENT EFFORTS

The Kenya Government is committed to the alleviation of food insecurity. The whole question of "Nutrition and Food Security" is discussed in Chapter 10 of the current Development Plan 1989-1993 (**Republic of Kenya**, 1988), entitled *Welfare Perspectives*:

> *"Some households have neither the ability to produce enough food for themselves nor the purchasing power to acquire food needed for adequate nutrition."*

It is also recognized by the Government that cultural practices and taboos sometimes bar people from consuming those foods which may be necessary for the sustenance of sound health. Diversification of food production which will ultimately result in the consumption of varied foods is recommended. Indeed, as mentioned earlier, traditional farming systems ensured diversification of food production and therefore a more varied diet than what we see in most Kenyan households today.

According to the National Development Plan, the Government will maintain a fixed reserve position of 6 million bags of maize, the main staple, for over a year during the plan period. To sustain food for security at this level, the public storage system needs to be expanded, and this is being done through the construction of silos across the country. It is proposed that major decisions with regard to the release or replenishment of the reserves will be made by the Interministerial Food Management Committee located in the Office of the President and will depend on reports from the early warning system that monitors crop status at all levels from planting, germination, growth, harvesting and storage. Kenya is also part of the Inter-Governmental Authority on Drought and Development (IGADD) which is supported by the Food and Agriculture Organization (FAO) and other agencies, and based in Djibouti.

Kenya, being a country that relies mainly on agriculture for its economic mainstay, and even generates a considerable percentage of foreign exchange from agricultural produce, has taken various measures to sustain high production levels. It does this through: offering incentives to farmers such as a periodic review of producer prices and offering favourable credit terms; making inputs such as fertilizers available when needed on time; and, making efforts to pay farmers on time for their produce.

Famines are bad, but they sometimes result in some very good long-term strategies to address the issue of food insecurity. For example, Kenya's Food Policy, (Sessional Paper No. 4, **Republic of Kenya,** 1981), came as a result of a severe drought the country had experienced the previous year, which had necessitated the importation of food. A major food item received from overseas was yellow maize. Kenyans were not used to this type of maize and subsequently made up a lot of stories about it. Measures were taken thereafter to ensure that the country never had to go out again looking for food, that at least enough staples were produced to feed the population.

The Food Policy was produced in record time and was aimed at increasing national food availability by improving the production, marketing and distribution infrastructure. Other measures taken were the expansion of public grain storage facilities during years of surplus, rationalized food imports and community swaps.

SIGNIFICANCE OF ON-FARM STORAGE

On-farm storage has always existed in the traditional farming systems. It was one of the ways by which farmers ensured food security. Usually food lasted until the next harvest. In addition, there were a variety of foods grown at varying times of the year and this ensured community and household food security. When a given family was hard-hit, other families with adequate food stores would share their food. These traditional mechanisms are no longer as cohesive as they were before. For reasons mentioned earlier, food stores are no longer in use. There is a need to establish to what extent farmers would use on-farm storage if appropriate structures were established once again. There are advantages of on-farm storage which should not be overlooked. It enables the farmer to release grains only when in dire need and when prices are favourable.

Some scientists have argued that the best way of solving the problem of undernutrition is to produce enough foodstuffs on a continuous basis. To ensure continuity in food supply, certain cereal grains and others, which when combined with the cereals, provide an adequate balanced diet. Yet we know that for various reasons, and constraints, in Africa, no foodstuff is ever available on a continuous basis. For example,post-harvest losses are usually very high, particularly in those crops which would alleviate malnutrition and promote food security if they were available on a continuous basis. Post-harvest losses are also very costly. There is need to conduct research in this area to establish exactly how much income would be saved if foods were properly stored and what impact this would have on nutritional status and food security.

Continuous research is suggested on drought-resistant crops and into on-farm storage policies which would benefit the farmer. Of course we know that increased food production does not necessarily enhance the food security situation. For example, if food is exported or is not priced well enough for the low-income groups, or a proper distribution mechanism does not exist to enable the food to reach those who need it, the problem will remain. We also know that children can be undernourished in the midst of plenty.

This is not to say that development and technological progress of agriculture are not important - far from it. Through such change, India prevented an increase of chronic food insecurity. Food grain production in India rose from 90 million tons in 1970 to 130 million tons by 1985. The value of this additional food, if it had to be imported, would have been on the order of 10 million US dollars. It is difficult to imagine any other type of development that would have contributed as much to food security in such a short time (**World Bank**, 1986).

One way of targeting the needy once food is available is through institutional feeding. One such programme exists in Tamil Nadu, India (**World Bank**, 1986). The criterion for targeting was children's growth. Children were admitted to the programme when their weight increased satisfactorily. Mothers were rewarded for taking good care of their children and the food cost was way below that of most feeding programmes for pre-school children. Mothers did not use the supplements for other reasons because of a sense of shame if the child did not gain weight. The project covered 9,600 villages - about a third of the state - and has averted an estimated 107,000 cases of severe malnutrition and 12,000 deaths. In addition, children who have been through the programme are 1.75 kilograms heavier at age 5 than children from control villages.

IMPACT OF INDUSTRIALIZATION

A major change in Kenya's socio-economic structure of becoming more industrialized and urbanized means that new processed foods will inevitably become part of our diets. Such foods must be convenient to store, to prepare and to carry. By processing foods, therefore, we have to forego some of the attributes found in fresh foods. However, it should be possible to insist that manufacturers of such foods take into consideration the health of the consumer. In Kenya, consumer organizations are becoming very active and are likely to act as watchdogs for the consumer. As

home economists, we also have a lot to do in terms of advising the consumer appropriately. Food processing should be encouraged and new ways found to utilize commercially some of the indigenous food crops. For example, on the market we have seen crisps made from cassava and arrowroot, which were traditionally boiled or roasted only. By establishing new outlets for these products, the farmer can be encouraged to grow them because there will be a market.

Food habits of Kenyans have been changing. As they change, traditional dishes need to be modified to suit new palates. As we develop new or modified dishes, not only do we need to understand cultural tastes, but our target population as well. Kenya is such a multi-cultural society that what may be acceptable in one reform may not be acceptable in another. An example is sour milk (*mala*) which is not marketed commercially and is a very fine product in both nutritive and storage attributes. *Mala* has done very well in those areas where sour milk has always been utilized but not so well in areas where sour milk was not a part of the people's diets. We also know that food habits are established very early in life. If we want children to be able to eat certain foods because they are good for them, we should not wait until they are in primary school or become adults to introduce those foods to them. We have to start early.

Let us come back to food producers in this country. Most of them are subsistence farmers who rely on their farm produce for food and for cash income. Because of the need for cash, and the fact that there is a ready market for cash crops, farmers might tend to produce cash crops at the expense of food crops, or produce those food crops which can find a ready market; in other words, food crops which suit the urban palate.

For Kenya, this has meant a shift from the indigenous cereals, millets and sorghums to white maize. Adoption of white maize by Kenyans is unique because it involves a staple food. White maize has taken such deep root that it is as if it has always been the traditional staple. Those who remember when maize was first introduced in Kenya (at the turn of the century) say it was very much resisted.

ATTRIBUTES OF TRADITIONAL FOODS

Traditional foods were simple but nutritious. Traditionally, plant proteins in the form of legumes played a major role in many people's diets. Animal proteins were provided mainly by wild game, domesticated animals, insects, blood, and milk. Most dishes were fully balanced. There were mashed foods of legumes and carbohydrates to which vegetables were often added. Most meals were cooked in a single pot, or at most two pots, thus saving time, energy and fuel.

In some communities, blood was drunk mixed with milk. Milk being deficient in iron but rich in calcium complemented the blood which is deficient in calcium but rich in iron. Both of them provided high quality proteins. Some regions have now discouraged the consumption of blood. Additional food items which were very nutritious but are considered odd now are: locusts, grasshoppers, white ants, caterpillars.

FOODS AVAILABLE NOW

Food available to Kenyans now include some of those which were traditionally available and new foods which have gradually found their way into our environment. In the urban areas, "junk" food is being found on supermarket shelves. Many of these "junk" foods are sweet and tend to make children develop a sweet tooth, not to mention the ill effects such patterns will have on dental health.

For special occasions such as birthdays, special items have become popular: sweets, sodas, biscuits, cakes and potato crisps. Heavy reliance by children on these types of foods have health implications.

Another problem is that most of the new processed snack-type foods are prepared without any real nutritional consideration in mind. For example, it is well known that hypertension is a problem in this country, yet crisps which our children like to eat are oversalted; such high levels of salt starts to predispose them to hypertension very early in life.

Why do people adopt new foods? This usually happens due to a combination of any of the following reasons: (a) prestige aspects and therefore demonstration of economic prowess and sophistication in lifestyle; (b) effective marketing strategies such as advertising, distribution of free samples or sale of new products at reduced rates; and (c) changes in lifestyle, such as urbanization, which call for convenience foods. People leading a busy life require easy-to-prepare and convenient-to-carry types of foods.

It is obvious that for urban populations, food tastes are changing very fast, and they may not be changing for the better. How about the rural populations? Although most of the urban foods may not be within the reach of the rural populations, it is obvious that urbanites are trend-setters in all kinds of changes, including eating patterns. The case of infant bottle-feeding is one in point. We have also heard stories where a rural mother may sell her more nutritious food to buy "modern" foods like bread and sodas for the children.

What challenges are there for home economists? For nutritionists? We need to address ourselves seriously to the following key areas: research, nutrition education, emphasis on our indigenous foodstuffs, and, looking into ways of easing women's workloads.

RESEARCH

As academics and practitioners, we need to understand the context within which we are operating. We have been well-known for telling people what to do without first taking stock of how effective our approaches have been in the past, and basing our activities on a lot of assumptions.

When we see that in the 1980s our children are still as ill-nourished as they were in the 1970s, we have not stopped to ask ourselves where we have gone wrong. A study is required to examine the actual food consumption patterns, the changing

food habits and the effects the socio-economic environment is having on these in different parts and amongst different groups in this country.

Another crucial area for research is the coping mechanisms by families during periods of food shortage and during periods of economic strain on the family. What happens to the quality and quantity of food consumed at household level during these times? How can we as home economists, without skills in family resource management, assist families so that they do not compromise their nutritional status during these difficult times? How can we assist them to produce a fairly acceptable meal from the scarce foodstuffs they may have available to them? How do we assist the rural housewife to be able to prepare better and more varied meals for her family within her time, financial and food energy limitations? How can we assist her so that she can be proud of her traditional roles of feeding the family and caring for the children? We need to understand the traditional mechanisms that ensured food security and try to integrate those with the modern way of doing things.

NUTRITION EDUCATION

As was said before, our approaches in nutrition education have not been as effective as they could be. We need to ask ourselves what we have based our prescriptions on? Have they been relevant to the majority of Kenyans? How come manufacturers of "junk" food and of baby formulae have beaten us at the game? Have our approaches made any impact on the way mothers feed their children, for example?

UTILIZATION OF LOCALLY-AVAILABLE FOODSTUFFS

Some attempts have been made to produce recipes that make sense to Kenyans. The production of *Complete Kenya Cookery* was a major breakthrough and resulted from the efforts of most members of staff and students of the Home Economics Department at Kenyatta University. More needs to be done not just in the way of recipes production in terms of publicizing the value and efficiency of our traditional foods. When a popular item such as wheat flour suddenly disappears from the market, we should come out and tell Kenyans what alternatives exist. We should address ourselves to the utilization of food in institutions such as schools, pre-schools, primary schools, boarding schools, hospitals and in the general education of the public. We have often been accused of being too westernized in what we do, but are we really? If we are, we must work individually and collectively to correct that image because Kenyans are looking for something they can relate to.

FINAL REMARKS

A lot of time is spent by women in villages on processing food. Few post-harvest food processing aids such as shellers, threshers and dehullers, which are energy and time-saving devices, have been developed. Increased mills at the community

level would ease women's workload and give them more time to care for their children. Improved stoves would make a woman's time allocation more efficient and would economize on fuel. This activity needs to be consolidated as the frequency of meals per day and thus nutrient intake, especially for the young, depends on fuel availability in the household. Improved stoves, in addition to conserving fuel and also allowing for more varied meals to be prepared, also has the advantage of saving some amount of time spent by mothers in fetching fuel wood. Water needs to be brought to women and women spend considerable amounts of time fetching water and firewood, and also spend inadequate time on food preparation and childcare, roles which they are still responsible for. The challenges of home economists are great.

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FOOD PRESERVATION: IMPLICATIONS FOR HOME ECONOMICS

by

Florence Efun Dovlo, PhD[1]

The continent of Africa has diverse climatic conditions that are suited for the production of both tropical and temperate foods. Staple food crops range from cereals, such as maize, rice, wheat, millet, sorghum to roots and tubers (e.g., yam, potatoes, cassava, sweet potatoes, cocoyam, plantains[2] and many others). Meat and dairy products such as milk, cheese and eggs may be obtained from cattle, goat, sheep, pigs, chickens, ducks, guinea fowl and several undomesticated animals such as deer, grass cutter, monkey, giant and cane rats, etc. Great varieties of fish and shellfish are available from the sea, rivers, lakes and lagoons. Leguminous grains consist of cowpens, lima, locust, pinto bean, chick peas, bambara beans, broad beans, soybeans, neri, melonseeds, groundnut or peanut and many others. Fruits and vegetables are numerous and varied, and comprise oranges, banana, pawpaw or papaya, mangoes, watermelon, pineapples, passion fruit, breadfruit, soursop, sweet apples, guava, avocado pear, peaches, apples, apricot, berries and others that grow wild. Vegetables such as okro or okra, pumpkins, mushrooms, onions, pepper, tomatoes, garden eggs or eggplant, aubergines, spinach and leafy vegetables of all kinds including pumpkin leaves, cassava and cocoyam leaves, as well as exotic ones as cabbages, strong beans, cucumber, carrot, lettuce, and many others are found throughout Africa. Nuts and seeds that provide fats and oils include coconut, groundnut, or peanuts, palm fruit and sheanut, palm kernel and melon seeds.

The production of these varied foods rely predominately on rural African peasant farmers many of whom are women. Production is influenced by the environment and demand for foods conditioned, at least in part, by food practices and attitudes. Food is utilized fresh or processed for a variety of products for taste and for better keeping qualities. It is needless to describe the various culinary practices which involve the ingenuity of the individual in applying the basic techniques of boiling, frying, steaming, stewing, roasting, grilling and baking, etc. Thus, different methods are used in preparing food for household consumption and for conservation.

Although Africa generally abounds in a wide diversity of food crops as described, it lags behind in producing a sufficient quantity of these foods to adequately meet the demands of growing populations. This is due, in part, to the seasonal nature of production and the dependence on natural weather conditions with the result that abundant harvest is short-lived and followed by "hungry" seasons. Africa is a continent of contrasts; there are food deficits in some countries (or parts of countries) due to severe droughts and food surpluses in others where rainfall is ample and soils are fertile.

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[1]Consultant, Nutrition and Food Utilization, Accra, Ghana.

[2]Plantain is known as banana in some regions.

In addition to the problem of general food insufficiency, there is frequently a lack of effective storage and preservation of the food that is produced, with the result that much of the production is wasted and lost to insects or rodents, or is spoilt. Losses of grains, especially leguminous grains, are estimated at 20 to 30 per cent of the total harvest in some places. It is therefore crucial to pay special attention to proper food preservation and storage in food production programmes.

The Nature and Function of Food

Food contains important nutrients such as carbohydrates, proteins, fats, minerals and vitamins, vital to human nutrition. Some of these nutrients may be destroyed or reduced during processing and preservation of the food. In addition, food contains a considerable amount of moisture which, in part, can be responsible for food spoilage. **Table 1** shows the major nutrients and moisture contents of some selected plant and animal foods.

TABLE 1

FOOD	CARBO-HYDRATE %	PROTEIN %	FAT %	MOISTURE %
Rice	80.3	6.8	0.4	12.0
Maize	75.1	8.8	3.9	11.0
Sorghum	74.9	9.7	3.6	13.0
Cassava	36.8	1.3	0.8	59.5
Yam	31.4	4.2	0.6	63.8
Cocoyam	42.9	2.6	0.2	54.3
Plantain	31.7	1.3	0.1	66.0
Beef	0.0	19.6	12.0	69.0
Fish	0.0	18.4	2.8	77.6

FOOD PRESERVATION METHODS

Even in ancient times, it was recognized that food needed to be transformed into edible and digestible products suitable for human consumption and that food spoilage had to be prevented and food surplus conserved for later use. Food conservation became more and more critical as man changed from food gathering to large-scale food cultivation. Thus, ancient man without the understanding of the factors that cause food spoilage had devised methods of food preparation, processing and

preservation such as cooking, salting, drying and smoking, as well as the development of preservable food products.

These technologies that are now referred to as "traditional" have been passed on from generation to generation and are widely used throughout Africa. Women have always been part of this agricultural system and are not only responsible for cultivating but also transforming the harvested crops into storable products and edible foods. Women also play an important role in post-harvest food conservation, as well as in food preparation for their household use. Most women are using food conservation and preservation techniques without fundamental knowledge of the scientific principles that underlie the techniques being used.

It is therefore important that with the advancement in women's education and in the specific discipline of home economics, attention should be paid to providing the necessary scientific knowledge and practical skills for food processing and preservation to bring improvement into Africa's food processing and preservation practices with an upgrading of the status of locally-processed and preserved foods. In this perspective, the subject of home economics which aims to improve the quality of life, should include the analysis of the causes of food spoilage by physical damage, enzymatic and chemical reactions and microbiological attacks in its food and nutrition component. It should also train students in the application of appropriate measures to improve the quality of foods.

1. **Physical damage**

   Physical damage of food may be caused by bruising. Food crops such as yam and cassava are dug out from the ground using sharp-edged instruments which may cause bruising of the crop. Fragile type foods like tomatoes, mangoes, pawpaw, etc., may be smashed or bruised in the course of packaging, loading and transportation. Bruising causes a break in the protective skin covering the crop and exposes the inner tissue to micro-organisms which may cause rapid deterioration and spoilage.

   Insects and rodents are another cause of food wastage. Cereals and leguminous grains are commonly infested by insects. Insects may lay their eggs in the floral parts of some fruits and vegetables long before they develop into fruits. While the fruit develops, the eggs also mature and hatch into larvae. It is common to find insect larvae in, for example, garden eggs and avocado pears that have no external damage. Meat and fish, if not protected or hygienically handled, may attract insect eggs from the housefly which hatch into larvae and render the product unhealthy. Rodents such as rats and mice may cause great loss of foodstuffs during storage in warehouses. These animals feed on cereals and tubers, fruits, vegetables and oil seeds and cause massive losses of crops each year.

2. **Chemical spoilage**

Living organisms contain biological chemicals that naturally regulate body mechanisms. When an organism dies, this controlling and regulatory mechanism ceases. Thus, the biochemicals continue breaking the body tissue without control, which causes spoilage. This is evident particularly in meat and fish. In some cases, the biochemicals react with oxygen and cause changes in colour, flavour and taste of the product and render it unpalatable and sometimes inedible. During the ripening of fruits and vegetables, these naturally-occurring biochemicals regulate the changes in colour. It is a common experience that when fruits and vegetables are exposed to hot sun, the activities of the biochemicals are hastened and result in faster changes in their colour and texture. Similarly, when fish is poorly processed and preserved, biochemicals will rapidly cause deterioration. The same phenomenon may cause rancidity and odd taste in edible oils, especially palm oil.

3. **Spoilage by micro-organisms**

Three types of micro-organisms are associated with food spoilage. These are moulds, yeasts and bacteria. **Moulds** can often be seen on the surface of foods, (e.g., bread). Oxygen, moisture and warmth are required for their growth. Therefore, tropical environments with temperatures ranging from 25-34 degrees Celsius and with a relative humidity between 75-90 per cent provide convenient conditions for mould growth. Consequently, spoilage of food by moulds is very common in tropical Africa. Fruits such as oranges, tomatoes, guava and pawpaw, etc. easily attract moulds. Among the roots and tubers, cassava and yam are attacked by moulds. Leguminous seeds and grains, (e.g., groundnuts) if not adequately dried, can also grow mouldy. **Yeasts** also require moisture and warmth for their growth, but unlike moulds, they are capable of growing both in the presence and absence of oxygen. Although yeasts can cause food spoilage, they may be useful in converting sugar into carbon dioxide and alcohol in the process of fermentation and are used in the production of wines and spirits. Also, yeasts are commonly added to wheat flour dough in bread-making to help raise the volume of the dough. Unlike yeasts and moulds, **bacteria** may even grow under cold storage. Bacteria cells can remain dormant for long periods and the spores can be blown and dispersed by the wind and become activated again under favourable conditions. Bacteria cannot generally tolerate high concentrations of sugar and salt and do not grow in very acid conditions. Thus, acid foods and those that are preserved with high concentrations of sugar or salt are more unlikely to become contaminated by bacteria.

Home economists should be knowledgeable about the factors which may cause deterioration and/or loss of raw or processed post-harvest food crops and should apply this knowledge in adopting measures for food protection, processing and preservation.

It is equally important for home economists to know the various methods that are used in preserving and storing food. The terms "food preservation" and "storage" are used to describe techniques to keep and preserve food crops for later consumption. Crops may be stored in their natural form for some time after the harvest without changes in their physical and chemical properties. However, for a longer storage, many food crops are processed (e.g., oranges and pineapples may be made into jam or marmalade or squash.) Fish and meat may be processed into various forms (e.g., oil-sardines, bacon, sausages or ham, etc.). Although the term "storage" refers mainly to food crops that are kept in their natural state, processed foods are also stored.

Most foods in their fresh form contain considerable quantities of moisture (see **Table 1**) which may be conducive to the growth of micro-organisms. Methods of food preservation, therefore, aim at reducing the moisture content of foods and consist of the traditional drying known in modern terminology as dehydration.

Traditionally, **drying** is achieved by exposing the food to the sun by spreading it on the ground or on mats. For a more rapid result, a modern method of concentrating the sun's heat as in solar drying has been introduced. **Mechanical heat drying** uses heat generated from fuel wood or charcoal in an oven, or heat from petroleum products such as cooking gas or from electric stoves.

All living organisms need water to survive. Dehydration - or drying - is therefore based on the scientific knowledge that moulds, yeast and bacteria which may cause food spoilage do not thrive in a dry medium. The amount of moisture contained in fresh foodstuffs can be reduced considerably by dehydration as shown in **Table 2** for selected foods.

The simple methods of drying food used in many African countries achieve fairly good results. However, the food products suffer changes in colour, texture and flavour. Modern technologies such as the use of deep freezers, cold stores and refrigerators are more common for commercial food (and in places, household) preservation and storage. Cold storage applies the scientific knowledge that organisms that cause food spoilage are rendered inactive at very low temperatures. The activities of micro-organisms which can cause spoilage of food in three days under tropical temperatures of 26-30 degrees Celsius are reduced if subjected to lower temperatures which allow for a longer storage of the food crops. **Table 3** shows the effect of cold storage on the keeping quality of some selected foods.

Treatment before drying

Blanching: Prior to drying, vegetables in particular should be treated with hot water or steam to destroy the biological organisms and chemical agents that hasten deterioration of the food crop. Fresh pepper, for example, is blanched by dipping it in boiling water for about three minutes to destroy these agents that cause the discolouration of the product when stored. **Brining, syruping and pickling** are other methods by which food is preserved. By brining, salt is added, (e.g., to fish, meat, etc.). It is a common practice for fishermen to spread quantities of ice mixed with salt

TABLE 2

MOISTURE

FOOD	FRESH	DRIED
Cassava	52.0-61.5	11.5-14.0
Maize	68.0-72.0	8.0-13.0
Fish (Anchovy)	73.8-75.0	14.0-16.0
Okro	82.0-85.5	12.7-13.5
Pepper	75.0-80.0	10.5-12.0

TABLE 3

FRESH FOOD	WITHOUT COLD STORAGE	DEEP FREEZER STORAGE
Mint	2 - 3 days	6 - 8 months
Fish	2 - 3 days	6 - 8 months
Tomatoes	3 - 4 days	6 - 8 months
Pepper	4 - 5 days	6 - 8 months

over their catch to keep the fish fresh for longer periods. **Sugar syrup**: A concentration of sugar in water is used to preserve (e.g., sliced pineapples, grapefruits, peaches, pears, etc.). **Vinegar** (acid solution) is used for pickling for example onions, cucumber, etc. **Smoking** is the most popular form of preserving fish in many African countries. Other food commodities such as game meat, snails and mushrooms can also be smoked. The result of smoking is a combination of drying and smoke deposits that impart attractive colour and flavour. Fish smoking is one of the many tasks of rural and urban women, especially in West Africa. Women use traditional methods that are passed on through generations and the knowledge of special fuel woods that produce the desired brown colour and flavour and taste of the products.

Different processing and preservation methods are used for the various food items mentioned here. Cereals and leguminous grains are further dried to a moisture level of 8-12 per cent before storage. However, the indigenous storage barns or cribs provide easy access to rodents to the stored grains which may cause great damage and

loss. Grains are ground into meals which may have lower moisture content but have a capacity for moisture reabsorption which may cause mouldiness, discolouration and fermentation. In many African countries, maize meals are made into dough which is subjected to varying degrees of fermentation for different dietary uses. But dough has a higher moisture content of about 60-80 per cent and without proper storage, may become too fermented for its purpose. Holding dough at the level of fermentation desired for a particular dish is a challenging research job for home economists, scientists and food technologists. Freezing, which delays the rate of fermentation, is so far the only effective method of preserving dough. But this is inapplicable in areas without electricity.

Home economists in conjunction with food technologists could work on the development of dehydrated fermented maize meal that can be stored and be readily available for household and industrial food uses. Attempts are already being made at developing this and other products in some African research institutions.

Among the root crops, cassava provides a substantial amount of calories in many African diets. Many food products are made from cassava, among which are flours and gelatinized grains known in Ghana as "*Kokonte*" and "*Gari*" respectively. Added to these is "Tapioca" (gelatinized starch) which is known worldwide. Processing cassava and other foodstuffs into storage products are critical issues that should be the concern of home economists. For example, the traditional method of drying cassava pieces on the bare floor and on roadsides which expose them to dew and dust which leads to mould and contamination before grinding into flour, is a practice which requires intensive education to change. Another example, processing the cassava into "*Gari*" involves grating the tuber into the dough and leaving it under pressure for days until the desired level of moisture is obtained. In this process, the dough gets fermented and may result in the "*Gari*" being too sour. Here, there is a need for standardization of the acidity of the cassava product that is acceptable to the consumer. This requires special expertise and it is strongly recommended that home economists venture into this industry to improve the quality of this popular, convenient and storable food product.

Preserving red pepper by sun drying is another large-scale occupation of rural women. Usually without blanching, pepper is spread on the roadsides to dry until its moisture content is reduced to 6-8 per cent. It is then stored whole or ground into powder for storage. Drying pepper on the road and often without blanching causes discolouration of the product in addition to its being exposed to dust and all forms of contamination.

In dry savanna climates of Africa, leafy vegetables, okro, tomatoes and garden eggs are sun-dried and ground into powder. Again, discolouration is a major problem that makes the products unattractive to consumers. Besides, vegetables that are preserved by sun-drying are known to lose considerable amounts of their vitamin content.

Oil seeds and nuts are processed into oils for preservation. This industry is also largely in the hands of rural women who still use tedious traditional techniques in producing oil which is preferred for its flavour and taste. The process involved in palm oil production, for example, consists of boiling the palm fruit until it is soft and pounding it in a mortar to loosen the fibre. For large-scale production, the boiled

fruits are pounded in large pits with the feet. The pounded mass is then blended with large quantities of water to remove the fibre and the kernels, and the oil is skimmed off from the top and heated to remove any moisture. Shea butter is another fat made from shea kernel (*Butyros-permum parkii*) and used for cooking and also as a pomade. Shea butter-making is another industry for women who use time-consuming methods of boiling the fruits for long hours followed by sun-drying for days until the nuts are judged to be sufficiently dried. After this, the shells are removed by pounding in a mortar or on a stone and then winnowed to remove the hull. The kernels are roasted and pounded until oil oozes out. The mass is also mixed with quantities of water and manually kneaded until the fat settles on top and is skimmed off. The crude fat is then heated for 8-10 hours to remove excess liquid. Finally, the fat is cooled while stirring to obtain smooth butter.

DISADVANTAGES IN TRADITIONAL FOOD PRESERVATION METHODS

As shown above, the traditional methods used in Africa for processing and preserving food have serious limitations. Not only are they labour intensive, time and energy consuming, inefficient and unhygienic, but also their production capacity is low (e.g., traditional oil processing efficiency has been estimated at only 40-50 per cent). Traditionally-preserved vegetables can become discoloured and lose considerable amounts of valuable vitamins. Fish dried on the beach becomes unsuitable for human consumption unless it is washed several times, and smoked fish must be heated frequently to keep longer. Cassava pieces dried on the road are subjected alternately to sun and dew and other environmental hazards and can become mouldy or contaminated. The use of unstandardized quantities of salt in preserving fish may cause one batch of fish to be too salty and the other insufficiently salted, causing decay. Considerable loss of grains caused by rodents and insects may occur when the grains are stored in poorly protected traditional barns or cribs.

Inappropriate packaging of food sold in the markets constitutes an additional problem. Maize meals and cassava flours, ground pepper and okro, groundnut paste and many other things are sold in open bowls exposed to dust, flies and all sorts of contamination. Furthermore, aflatoxin-infested groundnuts may be used in making groundnut paste.

IMPLICATIONS FOR HOME ECONOMICS

Advances in modern food processing and preservation technologies such as solar drying, improved fish smoking ovens, oil presses and labour-saving devices such as cassava graters and presses, nutcrackers, etc. are available to Africans who are involved in food processing activities. But these technologies are hardly adopted, which may be partly due to the high cost of the equipment and a lack of appreciation for modern technologies. This situation and the disregard for food hygiene will not change as long as food processing and preservation are left to rural women alone. It is, therefore, imperative that home economists and others with a sound knowledge and understanding

of the scientific principles that underlie food processing and preservation should venture into these small-scale industries. In this regard, the home economics curriculum can incorporate relevant content to prepare students for this kind of work.

Home economists can play a role in the development of appropriate technologies for household and industrial uses. Home economists should collaborate with technical or agricultural engineers in designing suitable tools and equipment that can reduce labour in food preparation, processing and preservation. Such equipment should be tested and evaluated in home economic departments and centres.

REORIENTATION IN HOME ECONOMICS CURRICULUM

Universities in Africa and elsewhere constitute important research centres. Home economics studies in these institutions which are concerned with improving the quality of life should be actively involved in research directed to reinforcing the traditional methods of food processing and preservation. The food and nutrition option in home economics should more adequately cover food processing and preservation, emphasizing the physical, enzymatic, chemical and microbiological factors that may cause food spoilage and should offer more practical training to the students in this field. It is equally important for home economics students to have a sound knowledge and understanding of the social and economic as well as the cultural and psychological factors associated with foods. Skills in research methods and project formulation are an important asset in the attempt to upgrade traditional processing and preservation techniques. In order to support the new approach of education towards self-employment, home economics students should be trained to become not only agents of change but also to take the lead in the application of their knowledge to the establishment of small-scale food processing and preservation industries.

RURAL OUTREACH TRAINING PROGRAMME

It can be envisaged that traditional technologies will long remain in use with the addition of simple time and labour-saving improvements and devices. In this perspective, Departments of Home Economics should engage in the designs of appropriate and simple improvements of food preservation and processing technologies that are affordable to rural women. For example, rural farmers may be taught to provide their traditional village storage barns or cribs with rat guards to minimize grain loss to rodents. Centres for home management practice in Departments of Home Economics should undertake testing and evaluation of existing and new technologies with a view to effecting improvements and assessing their suitability and affordability to rural women for both household and industrial use.

Extension work can introduce appropriate and sustainable technologies to rural households and communities, such as improved smoking ovens, solar dryers or raised platforms made with local materials such as bamboo. Drying on the bare ground or on the street should be discouraged. Farming and fishing villages could be at the center of such extension projects. Intensive functional education programmes should be

set up in adopted villages regarding hygienic food handling, processing and preservation. Home economics students who have taken the nutrition option should engage in research to propose more extended and developed utilization possibilities of indigenous foods.

Appropriate packaging is an important aspect of food preservation and should therefore be addressed by home economists in co-operation with food technologists. In order to upgrade the status of locally-processed and preserved food products, appropriate packaging is necessary to prevent contamination. A course in food preservation cannot be complete without studies on appropriate packaging.

FINAL REMARKS

In order to achieve these objectives and to encourage the adoption and the utilization of new technologies within the present social and economic conditions, community-based food processing and preservation centres can be established in the rural food producing areas and equipped with the new technologies. Home economic trainers should be offered opportunities to upgrade the level of their education and to develop competencies needed to meet these new challenges. Home Economic trainers should help them motivate their students to work in rural areas and to orient them towards development of entrepreneurship for self-employment. Home economists should accept these challenges in serving households, communities and the nation as a whole.

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ANNEX

Popular Name		Scientific Name
African locust bean	-	*Parkia clappertoniana*
Groundnut (Peanut)	-	*Arachis hypogaea*
Bambara beans	-	*Voandzeia subterranea*
Cowpea	-	*Vigna unguiculata*
Lima beans	-	*Phaseolus lunatus*
Pigeon Pea	-	*Cajanus cajan*
Soyabean	-	*Glycine max*
Sword bean	-	*Canavalia ensifarmis*
Winged bean	-	*Psophocarpus tetragonolobus*

Agushi (*Cucumeropsis edulis*)

Coconut (*Cocos nucifero*)

Groundnut (*Arachis hypogoea*)

Palm fruit (*Elaies guineensis*)

Palm kernel (*Elaies guineensis*)

Shea kernel (*Butyrospermum parkii*)

Melon seed (*Citrulus spp*)

NUTRITION EDUCATION

by
Penina A. Ochola[1]

INTRODUCTION

Food and nutrition are basic human needs. Throughout the world, people struggle to the best of their ability to produce and obtain food. Over time, various techniques and cultural practices have evolved and been adopted for food production, preservation, preparation and eating. Nutrition as a discipline has as its objective to direct attention to the food needs of individuals or groups of individuals and to formulate and implement interventions to achieve optimal nutritional status which is central to health and well-being. Nutritional problems and their solutions vary from region to region, country to country, area to area within countries.

In many developing countries, undernutrition is a leading cause of mortality among infants and young children. Mortality rates during the first year of life in some of the poorly-fed regions of less developed countries may be 10 times as great as that of the developed countries. One of the immediate causes of this high infant mortality relates to the poor nutritional condition of the mother before and during pregnancy.

The former President of Tanzania, Mwalimu Julius Nyrere once said:

> *"If Tanzania is to give its children a heritage of health as well as freedom, the people must change their attitude toward food. They must learn from each other and from the world about the kinds of foodstuffs which make a man healthy... By learning about better diet and using this knowledge, we shall be reducing our ignorance, overcoming many of our diseases and getting ourselves in a much better position to overcome poverty. We shall be building up the nation's most important asset - that is, ourselves as human beings."*

Embedded in this quotation is the element of education of people and the concern for adequate information and communication for appropriate and skilled nutrition. The undernourished infant or pre-school child is much more likely to succumb to common communicable and infectious diseases such as measles or whooping cough, which further exacerbate malnutrition. Any attempt, therefore, to improve the nutritional status of children, must include a parallel attack on prevalent health conditions. The success of this depends at least in part on information, education and appropriate communication with parents, particularly mothers and a supportive primary health system.

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[1]African Medical and Research Foundation (AMREF), Nairobi, Kenya.

NUTRITION EDUCATION

Nutrition education implies knowledge, sharing and exchange with a view to modified behaviour which is intended to lead to action for change. The health of people and their behaviour - their customs, their habits and the way they live -are closely linked and changes in one lead to changes in the other. Nutrition education can play an important role in prevention and in so doing, peoples' way of life must be taken into consideration - customs and cultural practices, attitudes, beliefs. While it is necessary for the "nutrition educator" to grasp basic principles of nutrition and clinical manifestations of malnutrition, an important part of the *art of nutrition education* is the transformation of this scientific knowledge into practical, culturally-appropriate information.

It is generally agreed that the traditional didactic form of nutrition education, popularly demonstrated by nutrition educators in Maternal Child Health Centers, hospital outpatient departments, etc. is limited in effectiveness in terms of improving nutrition-related behaviour and practices. Typically, a trained nutrition worker uses samples of local foodstuff and posters showing severely undernourished children. While lecturing, she does her demonstration the way she was taught. Typically, she shows the audience how to mix raw eggs with porridge, how to add protein foods, such as beans and fish to infant meals. She picks the carbohydrate foods and explains to the audience that these are for energy (*chakula ya kuongeza nguvu*). She shows the protein foods and explains that these are for growth and repair (*chakula ya kujenga mwili*), and then vegetables and fruits and explains that these are protective foods (*chakula ya kulinda mwili).* At the end of the session she will invariably ask "*Mume elewa akina mama"* (did you understand?). "*Yes*" will be the response.

A few weeks later during a growth monitoring session, one of the mothers has a child who is well underweight. When asked by the nutritionist what she feeds her child, she recites all the information she has always heard at the clinic. It is obvious that she has not been feeding her child all the things she is reciting, otherwise the child would not be so undernourished. Perhaps she did not have the means of obtaining the foods mentioned at the clinic, or her cultural beliefs dictated against the use of such foods for infant feeding. Most probably, the educator had not communicated with her learners. She may have demonstrated what she knew, but she failed to communicate. As she looked at the mothers during the demonstration session, and they appeared to be listening attentively. They were perhaps physically present but psychologically/culturally distant. "*It is the same old story that everyone has heard a hundred times*," remarked one of them quietly. Another one wondered: "*What good does it do? It goes in one ear and out the other*". The mothers sit and listen. They may even hope that she will stop talking. The thoughts of many of the mothers may be at home wondering when they will complete their household chores. Others are worried about the journey back - it is far and transport is a problem. Their minds are preoccupied with the daily challenges of life. There is little motivation to register and store information about food groups.

To be fully vital and meaningful, a training course should not be pre-packed; rather, it needs to be designed specifically for each particular locale and setting, for the people it is addressing.

THE KISUMU EXPERIENCE

The Kisumu Primary Health Care Team operating from the Aga Khan Primary Health Care Unit conducted a Participatory Nutrition Study. The approach to nutrition education in the project area emphasized teaching the three food groups in one meal, which is expensive and difficult to achieve even if the mother can remember what food belongs to what group. A common piece of advice given was to mix different food items into the porridge, such as beans, *omena* (silver fish - small fish from the lake), millet, finger millet, maize and groundnuts at one go. Frequency of feeding was also emphasized.

When in-depth household discussions were carried out, they revealed that many mothers were not practicing or using the porridge recipe they had been taught. Some of the reasons were: (a) although certain foods like eggs and beans may be available in the homes, it is not the practice for the people to use them in porridge. The taste and smell of the porridge mixture was not acceptable to mothers who in turn refused to give it to their children; and (b) many mothers are away from home for long periods during the day in search of food for the family and are unable to prepare the porridge. Young ones may be left in the care of older siblings, co-wives or grandparents.

THE CONVENTIONAL APPROACH TO NUTRITION EDUCATION

From the Kisumu experience and others, it is obvious that conventional methods of nutrition education that we as educators have adopted from our schooling and professional training may not be the best suited for promoting behavioural change. These methods do not rely on participatory elements of the learning process which we now know is central in changing attitudes and helping the learner acquire appropriate knowledge and skills. Conventional methods basically transfer information from the presenter's notes to the participants' notebooks; this information may never even pass through the learner's mind.

How we teach is just as important as what we teach. To become effective educators we need to develop approaches that are different from what most of us have experienced in school. How we teach depends greatly on how we feel towards those we are teaching. It is important to respect their ideas and encourage them to question

the educational content. If we fail to respect them, or if we make them memorize information without encouraging them to question and think we may end up doing more harm than good. Good teaching does not only mean putting ideas into people's heads but it also means drawing ideas out. The emphasis is on the learning process rather than on actual teaching.

PARTICIPATION AND EMPOWERMENT: HELPING PEOPLE TO LEARN

People's groups, organizations and movements have shown that the poor are social agents in their own right. In that perspective, poverty is, in effect, defined not merely as low income but also as lack of access to the bases of social power (information/knowledge is power). Today, education for nutrition and health addresses the learning capacity of social groups. The nutrition educator's most important job is to share knowledge, skills, experiences and ideas. This will increase peoples' ability and confidence to solve not only nutritional problems but other problems related to their health and well-being.

The key to effective learning is the participation in collective empowerment. The training curriculum should strive to prepare educators at all levels to become co-ordinators, facilitators and bridge-builders who discover, strengthen and expand people's expertise. Their role is to help learners to elaborate learning systems rooted in their experiences and culture. To improve the daily life of the people on a long-term basis, facilitators need to be trained to analyze issues in their local and wider context in such a way that they may help grass-root groups develop their own ways of analyzing their problems to be better able to tackle the root causes of problems such as malnutrition.

Factors which condition the way people learn include:

- --- Adults have a wide experience and have learnt much from life. They learn most from their peers. Therefore, the facilitators should help them to share their own experience and create a situation where they are encouraged to have a dialogue with one another.
- --- Adults are interested and learn quickly about those things that are relevant to their lives. The facilitator needs to create a situation in which learners can share in the planning, choose the topics and participate in regular evaluation of what they are doing.
- --- Adults have a sense of personal dignity. They must be treated with respect at all times and not feel humiliated or laughed at in front of others.
- --- As adults grow older their memory may get weaker but their powers of observation and reasoning often grow stronger.

It is generally accepted that people remember 20 per cent of what they hear, 40 per cent of what they hear and see, and 80 per cent of what they discover for themselves. (**Hope & Timmel**, 1984). Education should stress learning more than

teaching. Where possible, facilitators should create a learning climate where adults can discover answers and solutions for themselves.

METHODOLOGIES AND APPROACHES

The Psychosocial Method

The psychosocial method of nutrition education is learner-centered. It is based on dialogue, use of experiences and problem-posing. It is not like a banking process where a little more knowledge is deposited in each lesson, or where an outside expert is called upon to decide what the community needs to know or do and then to "pour" his or her own knowledge into empty heads. The role of the educator is to present to the community, in a challenging way, the issues they are already concerned with. The emphasis is on learning, not teaching. This approach helps people to develop critical thinking through group discussion, awakens people's sense of personal worth, makes them gain confidence and enables them to examine and analyze their situations and then to take action.

In this method, the trainer's role is to encourage each person to take an active part in the discussion and guide discussions to stimulate the group to think critically to eventually reach a consensus on the action to be taken. Each person should have an opportunity to take an active part in the discussion. The atmosphere should be relaxed and friendly. Critical awareness means that people must be allowed to speak their own words. Speaking for other people or making them repeat does not promote critical thinking.

Problem-posing education can be made much easier if one uses codes (starters) which have been specifically prepared for a group on the basis of generative themes which have emerged through survey. A code is a concrete presentation of a familiar problem. It may be a poster, a play, a slide, a film, a poem, a song, a diagram, a story or newspaper cutting, a proverb or case study. An important aspect of this approach is that it raises questions but does not provide solutions; it prompts participants to explore solutions.

The essential style of this training is a flexible - not the traditional (rigid) - classroom style. It is based on sharing experiences and critical analysis of a particular relevant problem in the community. It does not teach generalizations or abstracts, rather, it draws out of participants specific responses to the presence of a particular problem. For example, what can we do about the number of infants and young children who die of malnutrition in our community? It does not help to come up with sophisticated intellectual strategies and tools but rather to develop empirical, practical actions applicable at the individual, household-level.

The Survey Method

The survey method of teaching is based on accurate information drawn from the community. It is based on the perceived needs of community members themselves. In the survey method approach, information is gathered from the community using unstructured conversations and observations through focus group discussions. The

community members are encouraged to talk about the things they are most concerned about and nutritional problems in their community. Information is gathered from many places, e.g., at marketplaces, in the homes, at water points, at schools, etc. The information gathered is formulated into problems and prioritized and further discussed with community members. Priority topics are identified which serve as the basis for educational activities.

The nutrition educator focuses on the problems community members have identified, described and discussed. For example, the Kisumu case cited earlier had the following nutritional problems which were discussed and agreed upon as problems: delay of onset of weaning or early weaning; low frequency of feeds for the young child per day; mothers' impatience while feeding their children; poor personal and environmental hygiene causing diarrhoea; inadequacy of meals (too little food served to children). The list was long, but when the community prioritized those problems they felt they had the power to do something about them.

The basis of the survey method is participation, dialogue, experiences, co-operation with discussion between the learner and the facilitator. (The relationship is a collaborative effort of equals, unlike the conventional method where the teacher is the boss and the learner is a recipient). Mutual discussions draw on sharing and extending the experiences of the learner to identify, analyze and suggest solutions to their nutritional problems. The role of the facilitator is to help the participants unveil real situations. Creating a good learning atmosphere from beginning to end involves such things as: greetings, friendliness, a small group setting in a circle (close enough for normal conversation), equality, trust, sharing experiences with everyone contributing what they can. The essence of a small group is its sharing quality. The emphasis on normal conversation is critical to avoid the depersonalizing effects of traditional classroom teacher/learner interactions. The facilitator sitting down with the participants facilitates the exchange of ideas. The discussion should lead them to discover why the problem exists and what they themselves can do to alleviate it.

After posing the problem (which can be done through many forms, e.g., songs, pictures, role play, etc.), questions such as the following help to guide discussions:

*** What do you <u>see</u> in the play or picture (or what do you hear)?

*** Can you <u>describe</u> the situation?

*** What is the main problem <u>happening</u> in the scene?

*** Does this problem happen in <u>our</u> community?

*** <u>Why</u> does this problem happen in our community?

*** What is the cause of the problem and why does it exist in our community?

*** What can we do about it?

SELF-RELIANCE IN ACTION

Identification of real solutions to the actual problems people face in the village takes place. This should lead to action.

What will we do?
Who will do it?
When will it be done? and
When and how will we know that it has been successfully done?

An important consideration in the selection of teaching content is the feasibility of the participant's expectations about what they can do and achieve and the relevance of what the learning context must cover. The second part involves demonstration and practice of whatever skills are to be learned. The learner must have the opportunity to practice the skills using the knowledge that has been gained. Finally, a discussion and demonstration of what the learner is to do with the knowledge and skills s/he has learned and just how s/he is to do it should take place. The latter part is critical, it cannot be assumed that when a learner has analyzed a problem and learned to deal with it in the learning situation, s/he will automatically take this knowledge back into the community and bring on change. Considerable discussion and practice under supervision of the trainer are needed.

Nutrition educators/health trainers need good training and reorientation in this style of teaching if they are to effect change in communities. They must be given training which can help them undo certain teaching practices, in particular, formal lecturing. Unless these attitudes and practices can be thoroughly eradicated, behaviour change for action cannot be accomplished.

> *"It is not enough to explain to the health worker the people-centered approach. Their trainees must set examples. This means we must carefully and frequently examine our own teaching habits in terms of both the methods we use and the way we relate to the trainee health workers; they will be more able to help others learn by doing it if they themselves learn by doing."* **(Werner and Bower**, 1982).

Competency-Based Training

In view of the foregoing, the preparation of nutrition educators must be learner-centered. Their curriculum must incorporate psychosocial and competency-based training (CBT) methodologies. Competency-based curriculum is organized around functions (or competencies) required for the practice of health in a specified setting and is designed to respond to the health needs of the particular community that a health/nutrition education programme is designed to serve. It relates content directly to the job that the health/ nutrition educator will be doing in the community after his/her training.

Only knowledge, skills and attitudes which are directly beneficial to his/her performance in his/her setting are included. This process enables the trainer to focus specifically on activities that the trainee will continue doing after the training, and therefore eliminates the temptation of including extra topics. Nutrition education should be practical and deal with daily issues.

The Family-Level Approach

The Kisumu Primary Health Care team devised a household-based approach to reach the mothers at the family-level. Their experience showed that many mothers readily accepted their presence. Some, however, especially those with severely malnourished children, were reserved. It took a while to develop an amicable relationship between the staff and the mothers to enable open and frank discussions. The team also discovered that the "reserved" mothers had either some social problems or had deeply rooted cultural beliefs related to children's diseases and feeding. Others were shy and uneasy, simply because they felt that their dwelling places were not presentable. These feelings were later resolved through repeated visits by the same educator who eventually became a family friend. This close relationship helped the mothers gain confidence in the staff and in themselves. They were able to speak freely about what they were not practicing, giving reasons as to why not and/or how they actually reared their children.

The Group-Based Approach

The group-based approach is the most popular, as people are already accustomed to going to clinics for health care. In the Kisumu experience mentioned earlier, the team introduced the use of community graphs (a blown-up growth monitoring chart for demonstrations of weight gain). This was interesting because it enabled mothers to understand the use of their children's growth charts better. Community graphs and the big charts helped them to participate in discussions focussing on ways to increase a child's weight and assess an individual child's nutritional status.

In the group approach, mothers with underweight children were encouraged to see other children with similar problems. They heard testimonies from other mothers who had the same problems but whose children had since improved.

The final action plan was a joint venture and included mothers working with the team, thus actively participating and taking initiative in identifying available nutritious foods. They were involved in food preparation sessions and in developing the agreed-upon recipes. In this project, it was reassuring to note the keenness of the mothers themselves. They came up with a number of recipes which they proceeded to use. The experience helped the team devise appropriate health education materials and encouraged the households to grow more groundnuts, beans, vegetables, etc.

FINAL REMARKS

Innovative approaches such as those described above can only happen if nutrition educators have been trained to facilitate dialogue within the community. It should be noted that freedom to express feelings and learn from others is only possible when educators/trainers are face-to-face with the situation. The conventional approach which has been used over the years has its limitations. We can help nutritionists and trainers/health workers to develop new skills. Firstly, by initiating a community process (dialogue); and secondly, by appreciating that people have a way of life that determines the way they interact with their environment (attitude) and that they, too, have experiences in life that can augment the learning process.

Go to the People
Live with them
Learn from them,
Start with what they know,
Build with what they have.

But with the best leaders
When the work is done
The task accomplished
The people will say,
"We have done this Ourselves".

- **Lao Tsu**, China, 700 B.C.

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INTRODUCTION TO EARLY CHILD CARE/CHILD DEVELOPMENT

by

Julius S. Meme, PhD[1]

The most outstanding characteristic of children is that they are constantly changing, developing and growing, both physically and functionally. This is one of the major traits setting them apart from adults. Therefore, knowledge of normal growth and development of children is essential to any child care provider.

INTRODUCTION

The term human growth and development generally refers to the process by which a human being develops from the fertilized ovum to an adult. Growth implies changes in size or in values, given certain measurements of maturity; development may encompass other aspects of differentiation of form or function, including those emotional or social changes pre-eminently shaped by interaction with the environment. The degree to which an individual achieves his/her biological potential is the product of many inter-related factors. Genetic factors, for example, are sometimes thought of as establishing the limits to biological potential, but their final effects are determined by environmental factors. Trauma may be another factor affecting growth and development and may be pre-natal or post-natal; it may be chemical, residual from infection, physical, or immunological. Nutritional factors may also affect growth and may be partly determined by socio-economic factors. Social and emotional factors which may modify growth potential include the position of the child in the family, the quality of interaction between child and parent within the first hours, days or weeks of life, child-rearing patterns, and the personal concerns and needs of the parents. Cultural traditions and practices may limit children by establishing conventional expectations for their behaviour throughout life which may conspicuously influence the schedule of skill acquisitions such as sitting or walking, which were once thought to be almost entirely determined by maturation alone. Politics and culture are closely related, the political life of any community providing the arena in which the community's priorities are set, including those that may have profound effects upon child development.

Physical growth and development encompasses changes in the size function range from the molecular level, such as the activation of enzymes in the course of differentiation, to the complex interplay of metabolic and physical changes associated with puberty and adolescence. In early infancy, *intellectual growth and development* are difficult to differentiate from neurologic and behavioural maturation. In later infancy or early childhood, intellectual function is increasingly measured by communicative skills and the ability to handle abstract and symbolic material.

Emotional growth and development depend upon the infant's ability to establish supportive bonds of feeling, the capacity for love and affection, the ability to handle

[1]Professor of Paediatrics and Child Health, University of Nairobi, Kenyatta National Hospital, Nairobi, Kenya.

anxieties arising out of frustration, and the ability to control aggressive impulses. The relationships established in infancy with parents are extended to other familial and to extra-familial contacts.

Learning is an essential aspect of acculturation. Current learning theories suggest that the behaviour of the infant is determined both by inner needs and tensions and by the child's environment and may be modified. Behaviour may be determined and modified by the type of responses given. If a pattern of behaviour is consistently followed by pleasant circumstances such as reduction of need or by intrinsically-satisfying stimuli, then that pattern of behaviour will tend to occur with increasing probability. This correlation exists both for desirable behaviour and for undesirable behaviour, whether viewed in a personal, parental or social perspective.

The *reinforcement* of a specific behaviour may be termed positive or negative in accordance with whether it consists of a pleasant, rewarding experience or the termination of some uncomfortable, unpleasant, or aversive experience. In contrast to negative reinforcement, punishment implies the creation of an unpleasant situation upon the exhibition of a certain behaviour. Behaviour that produces neither positive or negative reinforcement, nor punishment, tends not to recur, and for an established or repetitive pattern of behaviour, such disappearance is termed extinction. There is a need to set limits to the behaviour of children from time to time through restraint or other measures that might be interpreted as punishment.

Techniques of *behaviour modification* and behaviour shaping have broad implications for socialization and discipline in childhood. Behaviour shaping involves identifying the behaviour ultimately desired and then rewarding actions which move toward or are partially successful in achieving the desired behaviour or which show a willingness to move toward it. As behaviour approaches the desired goal in quality, rewards are given only for behaviour representative of goal conditions. Once the desired behaviour has been achieved, it can be maintained through occasional further positive reinforcement.

A further consideration in the socialization and acculturation of children is the important role that models play; children even in the first months of life have a tendency to imitate the behaviour of those around them. As they grow older, they are able to draw lessons and inferences not only from experiencing the consequences of their own behaviour, but also from seeing that certain forms of behaviour have predictable consequences for others. The importance of models to the child can hardly be overemphasized. There is no doubt that what children see around them in reality or what they experience through mass media, such as television, newspapers and literature, may profoundly affect their systems of values and their notions of what is expected of them. It is important that the value system proposed for children by their parents and significant others can be congruent with the actual behaviour of these same individuals.

According to what has been described above, the broad picture of growth and development can be characterized as an intricate pattern of genetic, nutritional, health, social, cultural, and political forces. The pattern is unique for each child and may be profoundly different for individual children within the broad limits that designate "normality". Indeed, patterns of growth and development have such variability that they can often be adequately expressed only in statistical terms.

FACTORS INFLUENCING GROWTH AND DEVELOPMENT

Growth and development of infants and children may be affected by the following factors :

Heredity: Heredity may be, for example, at the base of variations in size of the members of different families. The effect of heredity may be somewhat altered by nutrition and ill-health (e.g., excessive intake of food may lead to obesity in persons whose naturally inherited tendencies would produce an individual of small size).

Prenatal factors other than heredity: Many prenatal factors other than heredity may adversely affect intrauterine growth and development, out of which maternal disease during pregnancy may be an important one. For example, diabetes mellitus, rubella in the first trimester or later, and syphilis and toxoplasmosis after the second trimester may influence progress of the infant or child after birth. Malnutrition in the mother especially during pregnancy may also be detrimental to the child's intrauterine growth and development. Furthermore, actinic rays, abnormal implantation, abnormal fetal position, as well as isoimmunization resulting from Rh or ABO incompatibility may affect the infant's growth and development. Any condition causing fetal hypoxia, with resulting cerebral damage, is also important. Prematurely born infants have a higher incidence of congenital malformations, anaemia, rickets, infections, feeding problems, and cerebral damage.

Ill health: Recurrent and chronic infections are specially important in affecting child growth and development, but rapid weight gain may follow the elimination of infections. Motor development may be hindered if the child's activity is markedly impaired because of illness. Congenital malformations may also exert significant influence on growth and development.

Environment: Low socio-economic status is often responsible for retarded growth and development because of less health care and supervision, poor housing and unsanitary surroundings. Newborn infants of poorer classes tend to be smaller than newborn infants of families who are better off. The psychologic environment of the child, especially tension in the family, may also affect his/her progress.

In many countries, a general increase in the weight and stature of children has been observed during the past 50 years. This may be a result of higher standards of living, which are reflected in better nutrition, health care and living conditions and in lower incidence of morbidity.

Endocrine glands: The thyroid, adrenal and pituitary glands have important functions in the growth and development process.

Sex: Boys are generally larger than girls until the age of 6 years. After this age, girls tend to mature about two years earlier than boys. At all ages, muscular development of boys is more advanced than that of girls.

Inborn errors of metabolism: Examples of these rare conditions are cystinosis, glycogen storage disease, phenylketonuria, and galactosemia, all of which interfere with growth and development. There are many other metabolic errors that do the same.

MEASURING GROWTH

Physical growth may be appraised by the following means: (1) measurement of weight and height; (2) measurement of head, chest and abdominal circumference; (3) determination of osseous development; and, (4) evaluation of dental development.

It is important that proper techniques be employed when measurements are made. Balanced scales without springs should be used for measuring weight. A 5 year old child or younger should be in the supine position when length (height) is measured. The instrument for measuring length should have a piece at each end which is at right angles to the piece that is held parallel to the body. One of the right-angled pieces is placed against the soles of the feet and the other against the vertex of the head. Standing height is the measurement used for children older than 5 years.

Use of growth charts for evaluating weight and height is extremely valuable and practical. One can compare the child's progress against the range of normal instead of against an average measurement. The basis of growth charts is the presentation of normal growth in terms of curves plotted along percentile levels. Thus, after serial measurements, one can visualize quickly whether a normal growth pattern has been followed or deviation has occurred. When growth charts are used, the rate of growth may be determined since physical size (height and weight) is plotted against the patient's age. Generally, the actual size of an infant or child is not as important as the rate at which growth proceeds.

Body Weight: Most babies weigh about 3.3 kg at birth. Infants weighing less than 2.5 kg at birth are classed as low-birth weight infants. As much as 10 per cent of the birth weight may be lost during the first three or four days after birth because of loss of excessive extra-cellular fluid and meconium and lack of food intake. Birth weight is usually regained by the tenth day of life. Normal infants gain approximately 20-

30 grams/day during the first 5 or 6 months of life. By the fifth or sixth month, weight is usually doubled. From 6-12 months of age, the weight gain averages about 10-15 grams/day, the birth weight approximately triples by the end of the first year. During the first year of life, weight gain should be regular; there should be no long periods (3 to 4 weeks) during which there is no weight gain at all. It is more important to appreciate an individual child's pace of growth. After the first year, weight gain is relatively steady, averaging 2-3 kgs each year. At about 2 1/2 years of age, birth weight should be quadrupled.

Body Height: The average length (height) of newborn infants is about 54 cm. During the first year of life, height is increased by approximately 23 cm. Thereafter, until about 7 years of age, the average increase in height is approximately 9 cm per year. Thus, birth length should be doubled at about 4 years of age and tripled at about 13 years of age.

Head Circumference: At birth, the head circumference is 37 cm. During the first year it increases by approximately 12 cm. The increase is less each year, until after 5 years of age. The head circumference is normally greater than that of the chest at birth; these measurements are about equal at 12 months of age. The posterior fontanel is usually closed by the sixth week of life. The anterior fontanel closes between the ninth and sixteenth months; closure is determined by palpitation of the soft spot. Slight separation of the bones of the skull may be present at birth, but most sutures are closed by the end of the sixth month.

Bone Development: Bone development can be determined by roentgenograms. Bone age is the average osseous development for children for a given chronologic age. Osseous development may be important when comparing chronologic age, height and weight of the child. Bone age is a valuable index of physiological maturity, as well as an aid in diagnosing diseases affecting physical growth.

Dentition: Eruption of teeth in infants begins at about 6 months of age but there are wide variations. Infants may be born with teeth, or the first tooth may not appear until the infant is approaching 1 year of age. Although a definite pattern of eruption generally occurs, this may vary greatly. Normally children should have 20 temporary (deciduous or baby) teeth erupted by the age of 3 years. The following general rule applies to the number of teeth present in the child: age in years x six = number of teeth that should be present. Thus, a child of 1 year old usually has 6 temporary teeth. The lower teeth usually erupt prior to the corresponding upper teeth.

Teething is a physiological process. Although it may cause excessive salivation, irritability, disturbed sleep and painful gums, it should not

produce fever. Use of teething powders and procedures such as cutting or rubbing the gums are not advisable. The first permanent teeth to appear are the 6-year molars. These erupt posterior to the second temporary molars. There are also wide variations in the pattern of temporary tooth shedding and permanent tooth eruption. Although the first permanent tooth usually does not erupt until 6 years of age, children should receive regular dental examinations beginning at 3 years of age.

PATTERNS OF GROWTH

Development (functional maturation) progresses in a cephalocaudal direction and is an indication of nervous system maturity. There is a characteristic sequence of appearance of the various behavioural manifestations. However, the age of appearance of a given behaviour may vary considerably in each individual child and does not necessarily indicate any abnormally slow development. Therefore, one should make careful repeated observations of a child's behaviour before diagnosing retardation. The following outline shows the principal behavioural accomplishments manifested at various ages through 6 years; all are approximative.

1 month	Tonic neck reflex position; fist clenched; holds chin up when prone; focusses eyes on object put in line of vision; cries when uncomfortable.
2 months	Smiles; makes cooing sounds; holds chest up when prone; eyes follow moving objects; hands held open more.
3 months	Good head control; opens mouth for feedings; hands open.
4 months	Laughs aloud; can seize toy held in front of him; puts hand in mouth; pushes with feet held erect; inspects own hands in play.
5 months	Rolls from back to stomach; turns head in direction of closest sound.
6 months	Sits alone leaning forward on hands; picks up small blocks using palmar grasp; bangs spoon on table; puts feet in mouth when supine; reaches for objects offered; knows strangers.
8 months	Sits alone; transfers objects from one hand to the other; looks for fallen toys; enjoys mirror; picks up small objects by bringing thumb and index finger together (prehension).

10 months	Pulls up to standing position; crawls; points with index finger; recognizes own name (will turn head when called); brings together blocks held in each hand; cruises holding to furniture.
12 months	Walks with support; stands alone; obeys "no, no"; drops block into cup; gives toy on request; holds cup to drink; knows two words.
15 months	Walks alone; crawls up stairs; names familiar objects; marks with pencil; says four to five words; indicates wants; uses jargon (unintelligible language).
18 months	Runs; points to nose, eyes, hair; says "hello" or "thank you"; seats self in small chair; partially feeds self.
24 months	Runs without falling; goes up and down stairs alone; uses three-word phrases or sentences; jargon discarded; obeys simple commands; refers to self by name; uses pronouns and verbs; uses toilet during waking hours; verbalizes toilet needs.
3 years	Jumps; gives full name; tells sex; can put on shoes; copies circles; repeats digits; feeds self well; knows few songs; names three objects in picture; can go down stairs alone; walks backward; can unbutton clothes.
4 years	Names three familiar objects; counts four coins; copies a square; dresses self partially; participates in simple group activities; washes and dries face and hands; performs errands outside of home.
5 years	Copies triangles; laces shoes; knows age; identifies four colours; skips, draws man; dresses and undresses without assistance.
6 years	Differentiates between morning and afternoon; knows right from left; counts thirteen coins; obeys three commands; repeats four digits in correct order.

* * *

There are various types of psychometric tests used at various ages (e.g., the Berry Brazelton Neonatal Assessment Scale, the Nancy Bailey Tests, the Stanford-Binet Test, the Denver Developmental Screening Test, etc.). However, these tests must be

used with caution as their results seem to be linked to the socio-cultural status of the family, which demonstrates the extremely narrow range of the usefulness of most intelligence tests. IQ tests have been used and misused for many social, psychological and political purposes.

ISSUES OF EARLY CHILD GROWTH AND DEVELOPMENT: AN INTEGRATED HOLISTIC APPROACH

There are many factors that influence child care and development at different levels of causality which interact in a complex way. These factors may be conceived as involving two sets of factors (basic and underlying) and the resulting intermediate variables. The intermediate variables influencing child care and nutrition are reproductive patterns and include maternal health, income, food intake, basic social/health services, child care facilities and practices. These intermediate variables are in turn dependent on the interaction of other factors at a broader level : the family/household situation, community factors and national global factors. These factors are termed "underlying" as they have a direct effect on the intermediate variables. Family/household factors include the level of knowledge of food security, access to basic services, access to resources base/assets, division of labour and the benefit from resources. But households are not isolated actors, they evolve within the framework of communities which operate within a given environment. Factors which are specific to the community and influence the individual household situation include such determinants as decision-making processes, structures of community participation, wealth distribution, environment and the level of economic development.

Finally, the community is part of a wider national and global system. The community acts under a given macro-economic policy framework determined by political, ideological and administrative systems; it is part of a state. The well-being of the community is determined by the level of development of the society, the patterns of wealth and income distribution, political and social stability.

FINAL REMARKS

In the final analysis, the underlying factors are determined by factors considered as primary or basic - basic because they are either unchangeable (geographical) or have evolved through a long process (tradition, resource base, etc.). The pattern of an extended family system is rapidly changing into a nuclear family setting and family support for child care is therefore breaking down. Urbanization, which currently has an annual growth of 9 per cent (Nairobi), is creating new problems such as overcrowding, housing and nuclear family isolation. This has great undesirable effects on child rearing (e.g., vitamin D dependent rickets is found in pre-school urban children as a result of lack of sunlight). Anxiety-creating mass media messages on how best to feed pre-school children is constantly beamed to parents. Some of the foods and drinks advertised are of little nutritional value. A young parent, living alone, with little previous child-rearing experience is easily influenced by these harmful messages

on child feeding practices. The utilization of high potential arable land for cash crop production is another issue. Growing of basic, traditional household foods is neglected in favour of cash crops. The eating patterns of households and children are drastically changed towards non-nutritious foodstuffs like bread, tea, mineral water and *Ugali*. Malnutrition and poor health form a vicious cycle. A child of poor nutritional status may not have enough energy to concentrate in a learning process. Poorly-fed children have little energy to explore the environment and play which are integral parts of learning and socialization. Ill-health can have similar consequences in the learning and socialization processes. In conclusion, the growth and development of a child is to a great extent dependent on early childhood experiences.

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CHILD CARE RESOURCES AND MATERIALS DEVELOPMENT: FROM A CHILD DEVELOPMENT PERSPECTIVE

by

Barbara G. Koech, PhD[1]

INTRODUCTION

Our children are our greatest assets, and every parent and teacher of young children wants them to not merely grow but to flourish. Froebel, a German educationalist, likened children to flowers, dependent upon the environment for the resources which necessarily will enrich them and bring out their full potential. His *Kindergarten* (children's garden) was developed on principles which would enhance children's growth and development (**Lundsteen and Tarrow**, 1981). As child care centres and pre-schools are established in Kenya, many considerations must be made in the selection and development of resources. This paper discusses resource and materials development from the psychological perspective of how children develop and the implications for child development. Specifically, the paper focuses on: (a) the psychological development of children from birth to six years of age; and, (b) the interdependent relationship between resources and materials in child care centres and how children develop psychologically.

CHILD DEVELOPMENT FROM BIRTH TO SIX YEARS

Children come into the world with certain simple, global, principally reflexive behaviours and characteristics. By the age of six, they are capable of independent thought, voluntary behaviour and decision-making; they possess concepts of who they are in comparison with others and an introductory level of moral judgments. This transformation is awesome and speaks to the potential of *homo sapiens* as a species. These psychological changes can be categorized into three areas -- growing, thinking and feeling. In reality, however, these three areas of children's development are closely interrelated.

Characteristics of the Newborn

At birth, infants are basically incapable of surviving without assistance. However, in recent years, research has pointed out that newborns are more capable than previously was thought. The brain of a full term newborn weighs about 350 grams - 25 per cent of its adult weight (**Dwyer**, 1981). Cell formation in the brain is nowhere near being complete. The newborn's cortical neurons are isolated and the interconnections between them are few. The chemical neurotransmitters which inhibit basic reflexive and involuntary

[1]Senior Lecturer, Department of Educational Psychology, Kenyatta University, Nairobi, Kenya.

behaviours are not present, so newborns have very little voluntary movement but are capable of diverse reflexive behaviours. Some of these reflexes are the building blocks of sophisticated motor skills (e.g., walking, talking); some are adaptive and help the baby avoid danger; and still others may be part of our earlier non-human ancestry. The sensory capabilities of newborns, while not as precise as those of adults, do provide infants with important information about the environment. For example, even though the visual system is immature and underdeveloped, babies are able to differentiate points of contrast and to "see" in a limited way objects or people approximately 17 centimeters away - the distance of their mothers' face while nursing. The other sensory systems are even more developed. Generally, all newborns can hear - some can hear very well -- even though the auditory cortex is still immature at birth. Newborns can taste almost as well as adults and prefer sweet solutions to bitter or sour ones. In addition, neonates have a keen sense of smell, reacting strongly to potent odors and are able to differentiate their own mothers' or another person's natural body scent and their own mothers' milk. In general, the newborns' sensory system and perception are developed in a way that infants are provided with a simpler and more selective world than that of their older brothers and sisters or their parents. Their attention to sensory data around them is active. They are not simply passive receptors and they are less confused than researchers previously thought because "their ability to detect stimuli or discriminate among them is seriously limited" (**Hall, Lamb and Permutter**, 1986, p. 126). The newborn can learn - at least some things under certain circumstances. Amidst their sleeping, feeding, crying and fussing, they recognize things around them and become bored (habituated) with specific familiar things and want new surroundings or things to look at. They can also remember things, but individual differences in these learning and memory abilities among newborns are great. Temperament differences among newborns are notable also, and these biological-based aspects of personality may influence the extent of learning of specific babies. Some babies are more active, less irritable and more responsible than others, increasing their possibilities for learning. Their temperament also sets the "tone" of social interaction with parents (particularly mothers) which consequently influences later social relationships and personality development including self-concept.

Development from Birth to Two Years

In contrast to the newborn, the two-year old has matured dramatically and is in the process of developing many skills and abilities. She can walk, run, jump and climb stairs easily.[2] She can follow simple verbal directions and uses two or more words in combination. She uses objects to represent other objects and includes others in this pretend play. She scribbles with a pencil or crayon and can stack six to eight blocks or objects (**Craig**, 1986).

[2]Rather than refer each time to children as he/she, we have taken the editorial liberty to refer to children collectively as *she* consistently throughout the paper.

Physiological and Psychomotor Development

This transformation that occurs within 24 months in every child encompasses all areas of development. Focusing on the physiological changes, one finds that during the period of infancy and toddlerhood, growth is rapid with the children making extensive gains in fat, then muscle tissue, and finally bone tissue. By the end of two years, the child is taller, leaner and the head is proportionately smaller. The brain of a two year old is about 75 per cent of the adult brain weight, whereas her body weight is only 20 per cent of the adult body weight. This weight gain of the brain is not due to increased number of cells but to the complexity of neurons as the child matures and his experiences increase (**Dwyer**, 1981). The primary motor areas and primary sensory areas of the cortex of the brain develop quickly, so that the child's sensory system and sensory motor abilities become more coordinated and developed. Motor abilities follow the "*cephalocaudal*" (head to foot) and the "*proxima distal*" (center outward) sequential principle, just as physical growth does. Babies can lift their heads before they can sit up, and they can sit steadily before they can stand. They usually crawl or creep before they can walk. Research on the age of onset of mobility suggests strongly that African children progress more rapidly in many of these skills than their European counterparts (**Ainsworth**, 1967; **Super**, 1976; **Geber and Dean**, 1957). Manipulative skills develop first with increased arm control, followed by hand control and finally by finger control. Grasping objects progresses from involuntary grasping, voluntary letting go, palm and the fourth and fifth finger grasps (ulner grasp), middle finger and middle palm grasp (palmer grasp), index finger and side of palm grasp (radial grasp) and finally the thumb and forefinger grasp (pincer grasp) around one year (**Berger**, 1980).

Perceptual, Cognitive and Linguistic Development

It has been suggested (**Elkind and Weiner**, 1978) that perceptual development is probably the greatest during the first couple of years. The sense of sight develops rapidly so that by the end of the first year, the child's visual system functions much like an adult's. Babies begin judging distance by two months, and by six or seven months they acquire depth perception. By the end of the first year, the child has learned to coordinate hearing and vision and is able to orient herself in familiar places, demonstrating the basis of space perception. Other senses that are present in simple form at birth (taste, touch and smell) also develop quickly. The process of perceptual development is consistent with the principles of Heinz Werner, that is, infants become more selective and discriminating in what they attend to as they develop. They prefer new or discrepant objects or sensory information and will attend to the new aspect - whether it is in terms of content, movement or complexity - until they have learned about it fully. Thus, the ability to perceive, to learn and to remember becomes increasingly better. This increasingly elaborate and maturing perceptual

system provides an important basis for what infants come to know about the world, how they represent it, its objects and their experiences. Children store information in their memories by constructing a model called representation. What they know can be represented in actions (enactive representation) such as "a banging thing", "a suckling thing", in images (imaginal representation) and in abstract symbols (linguistic representation) or concepts (categorical representation). These forms of representation appear to develop consecutively, and a young child of less than two years of age primarily uses enactive and imaginal representation. The development of concepts begins to develop early and children as young as ten months begin to form prototypes of categories. It is believed that children under two organize concepts initially in terms of the function of an object (their activity with it), then its perceptual characteristics such as colour, shape or size, and finally attach a name to it. Piaget provides a detailed theoretical perspective of the development of the thinking of children from birth to two years, which is identified as sensory motor thought. This period has six sub-stages depicted in **Figure 1**.

In summary, the child moves from rigid, reflexive actions, without differentiating between herself and the world around, to voluntary, coordinated actions, which through repetition provide knowledge about the surrounding world. By the end of this period, the child has constructed a view of the world and is able to solve problems through mental trial and error. The processes by which the child adjusts her basic knowledge of the world (her schemes, concepts) to more differentiated and complex processes are called "assimilation" and "accommodation". The child takes in information about something which is added to her previous knowledge (assimilation). Then, when she comes to something which does not match her previous knowledge store, she has to adjust her knowledge to include this new information (accommodation). There is evidence that young children accommodate best new information that is not too divergent from what they already know, and that they assimilate information about the world around them best if they experience it first hand through discovery and active exploration. Children's language development appears to be a parallel mental system which merges with children's cognition some months after birth. The development of comprehension and productive language is rapid and may be slowed but not disadvantaged in children who are learning several languages simultaneously, as is the case of many of Kenyan children. Research suggests that their developmental rate of understanding and speaking several languages is slowed, but that they appear to have the two or more languages integrated and less compartmentalized (**Lambert**, 1981). It is important to note that children's comprehension always precedes and exceeds their expression capacities of their language, so young children understand much more than they can express.

Figure 1

PIAGET'S SENSOR MOTOR STAGE

The Six Stages of Sensorimotor Development

Birth to 1 month	*Reflexes* -- sucking, grabbing, staring, listening
1 to 4 months	*The first acquired adaptations* -- accommodation and coordination of reflexes -- sucking a pacifier differently from a nipple; grabbing a bottle to suck it.
4 to 8 months	*Procedures for making interesting sights last* -- responding to people and objects.
8 to 12 months	*New adaptation and anticipation* -- becoming more deliberate and purposeful in responding to people and objects.
12 to 18 months	*New means through active experimentation* -- experimentation and creativity in actions of "the little scientist."
18 to 24 months	*New means through mental combinations* -- thinking before doing makes the child experimental and creative in a new way.

Source: Berger (1980, page 207)

Social, Emotional and Personality Development

During the first two years of life, the infant develops attachments to others, particularly to the primary care giver (usually the mother). These bonds become particularly strong as the child progresses toward her first birthday, and they represent a very strong inter-dependence, as well as vital emotional ties and feelings between the two persons. An infant's separation from the object of the attachment can cause intense feelings of loss, accompanied by distress and/or anger. These are normal reactions of a child developing normally. This period is also accompanied by apprehension of strangers, which is considered a major milestone in a child's cognitive and social development.

The child's temperament - the biological basis of personality - is shaped during these first two years. The mutual basic response styles present at birth are encouraged or restricted as the parents and others interact with the child within the familial and cultural context. For example, very active and curious infants may be encouraged or discouraged in their explorations. This "personality" develops within social relationships, and the patterns of these social relationships provide the foundation of the children's basic attitudes and beliefs toward themselves and the world around them. In his theory of personality development, Erikson describes how early interactions and social relationships can affect personality. In the first year, these interactions can lead to the development of the child's trust or mistrust that her basic needs will be met adequately. In the next stage, according to Erikson, one and two year olds vacillate between wanting autonomy and independence and wanting comfort and being dependent. Strong discipline at this point can lead to an overly submissive, frustrated or anxious personality.

As infants develop an awareness of the world around them, their own self-awareness develops. They initially begin to learn that their bodies are uniquely their own and separate, and by twenty-four months, children's language has many self-references. In addition, they become aware of gender differences and variations of sex role behaviours before the end of two years and they imitate some behaviours of the parent of the same sex, demonstrating some aspects of gender identity.

Development from Two to Six Years

Children within this age have a powerful capacity to symbolize and imagine. This leads to extensive pretend play, but also to more widespread fears. Their linguistic capacities have developed so that they are able to communicate as well as to comprehend. Their verbalizations remarkably reflect the language around them, but they still make "mistakes". Their energy to explore and their questions may seem unending. Their ideas about their own importance in relation to events around them are understandably humorous to adults. A closer look will reveal the extent of psychological development of children in this age group.

Physiological and Psychomotor Development

Physically the children in the two to six years age group continue to grow steadily, but the rate is considerably slower than in the first two years. The slowest physical growth at this time is around the fourth year. The rate and timing of physical growth patterns are unique to each child, but there are general trends. A child who has been sick or malnourished even for a short time will often exhibit "catch up growth" when recovered and given adequate nourishment.

In terms of body dimensions and shape, the head is proportionately smaller in relation to the body and the trunk and limbs continue to lengthen and slim down. Muscle tissue increases and ossification of the bones continues at a rapid rate. As the muscles increase, children's strength is enhanced, doubling between ages three and eleven. In addition, children's speed of responses during this age increases as their reaction times decrease, particularly after four years. Their coordination, which depends upon strength and speed, develops more slowly. Many major motor skills depend on the maturation of the bone and muscles, but practice and encouragement increases their proficiency. Consequently, by the end of this period they can skip, hop on one leg, throw, catch and kick a ball, climb and balance with some degree of competence.

There are differences in physical growth according to the sex of the child and these appear before birth and continue until late adolescence. Girls generally have more body fat and less muscle tissue than boys, and their skeletal system is more mature. Infant boys grow faster in the first seven months, and from seven months to four years, girls' physical growth is faster. Boys tend to excel in motor skills that require strength of the arms and legs, but this is not usually evident until between ages three and six.

Psychomotor development at this age includes the refinement of fine motor coordination and fine motor skills. As chubby fingers lengthen and slim and perceptual skills increase, the young child increasingly is able to tie and untie shoe laces, and control a pencil or crayon for drawing and writing. Similarly to major motor abilities, basic skills in these areas of fine motor coordination come with maturation of motor and perceptual coordination and proficiency develops with practice. Motor abilities and physical growth are important aspects of the self images of both boys and girls of these ages.

Perceptual, Conceptual and Linguistic Development

Several researchers of perception (**Gibson and Spelke**, 1983) point out that as children grow, their perceptions become more sensitive to subtle details and more efficient at picking up critical information. In addition, they become more proficient at generalizing their perceptions to similar situations. These developmental changes in perception occur dramatically between three and six years of age, as children's ability to coordinate information from sight and touch improve. By age six, children use sophisticated techniques in object perception, but still often attend to irrelevant and non-permanent features. This limitation is particularly apparent in the development of their place perception. Since young children select salient but unstable markers, they can get lost until significant landmarks are pointed out to them. However, by pre-school age (five years), children can move about places as confidently as older children if they have been provided with landmarks.

Young children do not perceive everything going on around them. Often they fail to perceive certain events or objects because they are not paying attention to them. In fact, young children in general do not look at (scan) objects or events around them in a systematic manner unless structure is provided. They may also stop looking at something before they gather all the information necessary for completing a task. For example, they will listen to a small segment of oral directions and then begin the task which usually they are unable to complete satisfactorily because they ignored other important information.

As young children develop, their representations such as images of objects and their concepts become more exact and differentiated. Young children in pre-school have an "ideal" model for a specific category, but they cannot identify attributes of the categories, which is why they become confused with over-generalized or under-generalized categories which represent the broadest levels of abstraction. To young children, a specific object cannot be in two categories. Research and the study of memory suggests that the storage capacity (space) for remembering does not change with age, but young children have more difficulty in putting something into memory and in getting it out. These encoding and retrieval processes use up most of the memory space. However, as children become more efficient in these processes, around primary school age, more space is available for memory as well as complex manipulation in memory ("operations" in Piaget's terms).

Recognition memory, the easiest form of memory, is quite good among pre-school age children for simple things. With more complex stimuli which require scanning and encoding of diverse perceptual attributes, young children generally do not do very well; they overlook certain aspects and details. In addition, young children's limited experiences often influence their ability to recognize objects, because some types of recognition depend upon a child's previous knowledge. Consequently, pre-school age children may be as proficient as adults in recognizing realistic and familiar objects, but not on abstract pictures or unfamiliar objects. Their ability to reproduce information or events they have previously seen or experienced - that is, their reconstruction of them - is superior to their recall. Pre-schoolers' recall, particularly of concepts, is poor - perhaps because they are not yet clear of strategies for remembering (such as rehearsing or clustering) or perhaps because they are unable to search systematically. However, their recall of personal experiences, songs, poems, social events can be astonishing. By age six, many children recall stories as much as adults do, demonstrating meaningful interpretation of the events, but not the exact wording.

It is interesting to note that children as young as three years have begun to develop metamemory, meaning that they are aware of remembering or forgetting things. Frequently however, if they forget something, they will comment that they "don't know" rather than they "don't remember". This awareness of

memory continues to develop in primary school years, particularly as children develop strategies to remember.

The thinking process of young children of two to six years is more advanced than the sensory motor period, but still is not similar to older childrens' or adults'. Piaget refers to the thinking of these young children as "pre-operational". There are two substages: a preconceptual sub-stage from ages two to four years and an intuitive or transitional sub-stage from five to seven years. **Craig** (1986) describes the characteristics of thought of children in these substages:

> *The preconceptual stage is highlighted by the increasing use of symbols, symbolic play, and language. Previously, thought was limited to the child's immediate environment. Now the use of symbols and symbolic play marks the child's ability to think about something not immediately present. This development gives the mind greater flexibility. Similarly, words now have the power to communicate, even in the absence of the things they name. Children in the preconceptual stage still have difficulty with major categories, however. They cannot distinguish between mental, physical and social reality. They think anything that moves is alive - even the moon and clouds. They expect the inanimate world to obey their commands and they do not realize that physical law is separate from human moral law. These traits stem partly from children's egocentricity; they are unable to separate clearly the realm of personal existence and power from everything else...*

The intuitive, or transitional, stage begins roughly at age five. The transitional child begins to separate mental from physical reality and to understand mechanical causation apart from social norms. For example, before this stage of development, children may think that everything was created by their parents or some other adult. Now, they begin to grasp the force of other powers. Intuitive children are beginning to understand multiple points of view and relational concepts, although in an inconsistent and incomplete way. Their comprehension of arrangements by size, numbers, and spatial classification is incomplete. Transitional children are unable to perform many basic mental operations (**Craig**, 1986).

It is important to note both the strength and limitations of the thinking of children during this age group. They have progressed far and begin to isolate events and to relate them in time and space, but their conception of time still is not like that of an adult. They have come to understand time in terms of past as well as present and to anticipate the future, but their thinking is far from being precise which is reflected by their language. Such sayings as "when

I grow up, mama, you can be my baby" reflect their limited conception of time.

However, the beginnings of logic are evident in this period, as children relate two events which occur simultaneously. This transductive logic appears illogical to adult minds, capable of both deductive and inductive reasoning, but nevertheless it can be considered a beginning in the development of logical thinking. The problem here lies not in the relating of events to objects but in other limitations of children's thinking: they concentrate on fixing their attention on a limited perceptual aspect of what they are looking at. They do not explore all aspects; consequently, they miss important information. Although the environment can structure their attention to see more, their mental immaturity does not allow them to think as adults do. One reason for this is the inflexibility of their thinking. The relationships they see are rigid. They consider, for example, that certain behaviour has specific consequences no matter what, without any consideration of the specific circumstances. Everything is black or white - there are no nuances.

Children's thinking is egocentric - they take their own perspective as the basis, initially unaware that there is any other perspective. Among the younger ages, it is common to hear expressions such as "the sun is following me around". Slightly older children suggest that "it's sunny so I can play". It is not that they are unempathetic or can't learn to take another's point of view. Rather, initially they don't realize that there is any perspective other than their own. In social situations, they begin to learn that there are other points of view and this egocentrism declines. However, comments such as "President Moi looked and waved at me when he drove by" may still be common by the end of this period.

Another limitation of thinking at this age is the difficulty in understanding transformations and reversibility. Objects in our environment are transformed physically - balls of *unga* into chapatis, cooking fat from solid to liquid form, seeds into seedlings and plants. Initially, young children do not understand these transformations at all. Their concentration and inflexibility cause them to believe that the transformed objects are not the same ones. Later they begin to understand certain transformations, such as the changing arrangements of objects. Other transformations they do not comprehend until later, because they don't comprehend "reversibility".

Children's understanding of the reversibility of situations develops very slowly. They might be aware by age three that a packet of milk which dropped and spilt cannot be put back, but then not understand why a birth or death is not reversible. However, the thinking of children of this age has made tremendous progress, for now they are able to represent the world symbolically. Through language not only can they communicate their needs, but they can mentally represent the world in a more efficient manner. They can use symbols rather

than images for comparison and contrasting. Consequently, their knowledge store can increase dramatically, focusing on attributes and relationships, as well as on categories and subcategories.

This symbolic representation enhances children's categorization capabilities. One of the first categorization abilities seems to be in seriation - ordering concrete objects such as blocks or sticks by size or length. Children of three and four years can often seriate using one perceptual attribute - length. This seriation is the basis of transivity - a sophisticated skill of arranging and combining objects in their heads. However, transivity itself is impossible for children at the pre-operational stage because of its language and memory demands, yet its basis is present in young children.

Although young children (ages two and three years) can group objects by function or perceptual attributes, they do have difficulty comparing a group of objects with a subgroup of the same objects. Generally, it is believed now that the problem lies with their ineffective encoding of the hierarchical categories (class and sub-class). Only older children can encode and later use hierarchical classes of objects simultaneously. In young children, the encoding of the categories and sub-categories of a prototype may overlap with other categories and sub-categories (e.g., a ball is a toy, but it is also a throwing thing like a paper airplane or a kicking thing like a can, and these are not toys so a ball is not a toy); consequently, there is contradiction.

Language competencies are further developed and children are more and more capable of representing their world in symbols. By age three, they have an extensive vocabulary, know much of the grammatical structure of their language(s) and understand how to represent their ideas in a basic meaningful way, but of course there is much more for them to learn. Some characteristics of the language development of this period are discussed below. By age three, children have an extensive vocabulary of about 1000 words and they speak in four to five word sentences. At this age and for several years, they frequently overextend words in meaning. Sometimes this reflects a limited vocabulary, a switch to a second or third language, or the attribution of a different meaning to the word used.

The development of children's understanding of syntax (the decoding of the order of words) that began earlier in infancy, becomes more advanced as the length of their sentences increases. The first telegraphic sentences of very young children employ the crucial relationship of meaning within the correct order and structure of the language. As sentences get longer, the relationships expressed become more complex and negatives, prepositions, verbs and conjunctions appear. Opposites to some words are learned and some words can be defined by the six-year-old child. By age six, the child's language is basically grammatically correct, although some exceptions to the rules are ignored. Also,

the language becomes less egocentric, as the function of language shifts to communication from its earlier less social functions.

Social, Emotional and Personality Development

Social relationships of children of these ages are increasingly important for their cognitive and personality development. By the age of four, children play together cooperatively and without competition. In this play, they frequently develop elaborate symbolic games of imitation of real-life situations. This symbolic play has specific functions to provide practice on adult role behaviour, to provide feedback on appropriate role behaviours, and to provide emotional release of tension as they try out and practice real-life situations. Children by this age are learning the culturally-approved ways of expressing their emotions. They have more control and are more diversified in these expressions than the infant or toddler. Verbal expressions are more frequent and the use of defense mechanisms (such as blaming others or denying one's own guilt) is common.

Children between ages three and six are trying to maintain their autonomy and to develop their own initiative in their activities. They are less dependent on adults and begin to identify with parents and others of the same sex as they develop. They have to seek a balance between their own exuberance in planning and carrying out activities and controlling themselves and assessing the appropriateness of their actions. This is the crisis of this age. If they repress themselves too much, their personalities can be negatively affected; they are guilt-ridden and may suffer from repression.

This is the time of serious fears in children and, it has been stated, (**Papalia and Olds**, 1982) that it is also the time of the development of the greatest number of new fears in children. Children now have more experiences which also may generate fear; they are more aware of experiences of others which also provoked fear. In addition, their imagination at this age frequently suggests even unreal events which are frightening. As they continue to grow older, bigger and more competent, most of these fears disappear. Experiences in non-threatening situations and viewing models who are unafraid also help them in overcoming their fear. Talking about their fears within a confidential, trusting relationship may be beneficial.

* * *

Some of the developmental characteristics of children from birth to six years have been reviewed. We have come to realize that young children are more capable than we may have thought and that they are constantly learning, in all types of situations and from everyone around them. It is important to consider what they learn and how we can enhance this learning. Basically, we know about young children that they learn about their world, themselves and the

people who are surrounding them. They learn about relationships, about values and attitudes, about characteristics of objects and people. They learn to think symbolically, to remember experiences and meaningful sayings, poems and songs, and to express themselves in appropriate language and mannerisms. The best way to enhance this learning is to structure the environment in such a way that it takes into consideration how children learn best and what they need for learning - that is, to recognize that it is through their experiences and play that they learn.

IMPLICATIONS FOR RESOURCE AND MATERIALS DEVELOPMENT

The important question to be considered in this section concerns the structuring of the environment of a pre-school, in order to enhance the learning of young children from ages three to six, in areas considered important to the Home Economics Department of Kenyatta University. In order to describe an appropriate structuring in which resources and materials will be developed, it is necessary to consider the various types of resources common to pre-schools. Three broad categories of resources described in this paper are: physical buildings, facilities and space; teaching, learning and administrative materials; and human resources. It is the opinion of the writer that of all the three categories of resources, the human resources are the most important as they are the basis of appropriate decisions concerning all other resources and the entire learning environment and atmosphere.

1. Physical Resources

The physical resources of a child care centre include the grounds, buildings, permanent furniture and play equipment and other types of permanent equipment. The Kenya Institute of Education in its **Guidelines for Pre-School Education in Kenya** (1984) and **UNICEF** (1986) describe clearly appropriate standards and considerations for the selection and development of these physical resources in order to meet the health, safety and developmental needs of young children. Some of these considerations are:

Locale: The child care centre houses a pre-school situated near the children's homes - preferably within walking distance so that it is an extension of the child's community. This enhances the link between the home and the pre-school from the child's point of view, and facilitates the emotional transition from dependence on family members to greater independence.

General aspects of facilities: If at all possible, the child care centre, and specifically the pre-school, should have their own unshared buildings and sanitary facilities, developed with the small size and the developmental needs of the children in mind. To

increase their potential for independent, responsible behaviour, the scale of toilets, door knobs, sinks, windows (at least a few) should be lowered. Children of these ages are more likely to develop initiatives in an environment where "they fit" in terms of their relative size. However, their small size does not imply that the rooms should be crowded and congested.

It is preferable that the pre-school buildings and facilities be used for only complementary functions. If the space is shared when the pre-school is not in operation, there is a probability that teaching and learning materials for the pre-school could be damaged or taken. Consequently, some secure storage facilities are particularly important if the buildings are shared and used for other functions.

Some of the facilities which should be included in the child care centre for the pre-school include: teaching/learning rooms; a kitchen for cooking nutritious snacks or meals for the children (and where in small groups preparatory activities for cooking can be done); separate toilets for boys, girls and teachers; offices for the teachers and head; a "sick child" room; and a play veranda for indoor play on rainy days or for messy play which is not suitable for the teaching/ learning rooms (water and sand play, for instance).

Optional use of indoor space: The centre should have sufficient space for the number of children using it. The recommended minimum space per child is $1m^2$ and for a group of 20 children the room should be minimally 4 metres by 4 metres. Children may be small but they need to move about; the room should allow for different areas in which varying experiences and learning can occur. Some of these include the following: a game corner, a library area, a doll corner, a painting corner, a place for construction, a drawing corner, and an area for crafts. In addition, there must be space for the storage of supplies and materials for these and other areas since these experiential corners should rotate, or the materials included should be changed periodically to maximize the children's participation and learning. As children get bored, the corners should be changed.

Adequate ventilation and lighting: The rooms for the children and the observation booth should have adequate ventilation and lighting. Windows have the advantage of providing light for growing plants, as well as, ventilation and light. Some windows should be placed low so that children can see outside.

Maximizing outdoor space: There should be adequate play space outside that is well-drained, fenced and sheltered from strong winds. The fencing is important for the safety of the children. Its size should minimally be 25 square metres, so that there is plenty of space for large motor activity (running, throwing, crawling, climbing, pushing, etc.). Permanent equipment for these activities should be cemented down, and the cement covered with soft material. Sharp objects (glass, tin can lids) and harmful plants should be removed. There should also be areas for self-expression, nature and environment study/exploration as well as open spaces.

Equipment and furniture for inside and outside also need to be discussed. Children at young ages sit very well and comfortably on mats or soft pillows. However, if chairs and tables are to be used, these pieces of furniture should be child size and durable. There should be plenty of shelves and cupboards for storage and many diverse display facilities. The shelving units that are free standing (like open book shelves or stackable tables) are extremely practical as they are mobile and can serve as storage and/or display units at different times. There also should be low chalkboards, not so much for teacher use as for children to scribble and draw on. Tables and chairs for the teachers and a few visitors are also necessary.

Outdoor equipment and furniture should be varied. Tires, ropes and tree stumps are basic equipment which can be donated and used in numerous ways for the children's enjoyment and motor development. Members of the local community could be mobilized to create the outdoor play area after the original design has been developed, but this point will be discussed later in the section on human resources.

2. Materials and Supplies

Extensive investigations have been made internationally of some appropriate supplies and materials for child care centres and pre-schools. Diverse lists of these materials have been generated to suggest the divergent types of objects, supplies and materials. Generally, the materials consist of three categories: teachers' materials, children's learning materials and administrative materials. In a paper prepared for a workshop on early childhood education in Nairobi, **Mialaret** (1976) identified some basic criteria which have relevance in the identification and development of materials for the pre-school and child care centre. The learning materials for the children should be polyvalent; that is, they should be used in many different ways by the children. They might be

used in water play, as a printer in painting or play dough construction, as a counter, and any other usage that children conceive in their imaginative play.

The learning and teaching materials should be attractive to the children. When children are attracted to pictures or objects, they pay attention to them and can learn from them. At this age in particular, children look at functions and perceptual characteristics of things around them, but they select those which are attractive and meaningful. Because children at this age are still developing their motor coordination and are not yet aware of their strength, materials should be durable. There is the risk that some materials could be damaged during children's play. Consequently, teaching materials should be protected (using a plastic contact paper over the pictures and charts or stored out of the reach of the children) or the children should be given gentle instructions on how to use the material so it will not be damaged. Some learning materials of interest to children (leaves, flowers, seeds, colored paper, etc.) can be by their own nature consumable and the fun part of these materials is that the children themselves can collect them for the classroom.

Another consideration for material selection and development is the size of the materials. It should be taken into consideration that young children of age three do not yet have the dexterity and flexibility of that of a child of six when handling diverse objects. Consequently, very small objects may sometimes be difficult for young children to play with. An important consideration for the development of teaching and learning materials is that they should meet the children's needs and allow psychological and intellectual functions to occur naturally. More specifically, the materials in pre-schools should meet the needs of the young child for activity, for curiosity, for building and destroying (reverse processes), for self-expression and for personal creation. In addition, they should allow for the child to explore and experience first hand, and through these processes the child will learn.
The selection and development of specific materials for the child care center, through which the children will learn through play and discussion, deserves some mention. It could be said that almost any local materials that can provide valuable experiences for the children is appropriate. Such materials can be grouped according to the activity or area in which they might be located or the type of learning which children might have with the materials[3].

[3]A list of learning materials for pre-school age children appears in the Kenya Institute of Education, *Guidelines for Pre-School Education in Kenya*, 1984.

Another very useful way of categorizing the materials for a pre-school or child care centre is based on their source or how they are obtained. This categorization suggests the importance of a broad base of human resources, which will be discussed in the next section. There are four general categories of materials based on how they are obtained. The first are those useful objects which are found in nature. Rocks, seeds, leaves, shells, wood branches, feathers and birds nests are all examples of this category. These are usually very polyvalent by nature and attractive to children. In addition, the children could be very helpful in collecting them for the centre.

The second general category are materials which are made for the child care centre or pre-school by either teachers, home economics students or parents. Mounted pictures, charts, tags with words on them, games, hand-made picture or story books (based on the children's stories or experiences), alphabet and number cards are only a few of the materials in these categories.[4]

A third category of materials are those which can be purchased ready-made for the pre-school or child care centre learning activity areas. Yarn, buttons, fabric, needles (large, dull ones for sewing knitted items together), paper, crayons, pencils, books, store-bought games and toys are only a few of the materials which could be purchased by the Department for the centre. However, many of the items and objects in this category could be donated.

The fourth category of materials are those raw materials or finished products which are given to the centre by individuals or businesses. Many items for the playground - tires, rope, wood beams, tree stumps, large pipes, large spools from telephone wire, large stones, etc. - are often procured from community members and businesses. Many items for the construction, sewing, cooking and woodworking centres could be donated. The same is true for the house corner, the dramatic play centre and the "kiosks" within or outside. (See Annex: **Some Materials which Can Be Donated: Sources and Types**). It is important to recognize that for the rural outreach training programme related to the child care centre, many of the store-bought materials are not available in the rural areas, but local materials can serve the same purpose. For example, *unga* paste and natural vegetable dyes are important substitutions.[5]

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[4] *Resources for Creative Teaching in Early Childhood Education* by Flemming and Hamilton and *Guiding Young Children's Learning* by Lundsteen and Tarrow are excellent resources concerning materials which may be made for pre-schools.

[5] Also see the UNICEF *Manual for Pre-School Teachers* which contains various recipes which are applicable to make natural pastes, coloring and play dough for members of a rural community pre-school to use.

3. Human Resources

As was stated previously, human resources are the most important resources to be developed. Once the diverse types of human resources are considered for their important roles and developed as fully as possible as resource persons, the selection and development of the other general categories of resources (physical and material) is greatly simplified. Some examples of this perspective will be discussed as the diverse types of human resources are described. Professionals in child care and pre-schools could provide valuable information concerning the site, buildings, grounds and other facilities, to make sure that the child care center appropriately caters for the needs of the children and provides an environment which is favorable to the children's development. The experts also can assist in locating inexpensive sources for some of the teaching/learning materials for the centre. The Kindergarten Head-mistresses Association is a local group which may be very helpful, as well as members of the Kenya Institue of Education Pre-school Education Unit.

Teachers are an extremely important resource which truly need development. Teachers for the child care centre and pre-schools need to be trained in early childhood education and development of the young child so that they understand and appreciate their own role and the children's role in the centre. Untrained teachers are more likely to use didactic teaching materials, even if their rooms are full of learning corners. Teachers are important decision-makers in pre-schools, and they should be given training in decision-making related to the important areas for learning, how to diagnose strengths and weaknesses of individual children with reference to specific types of learning (potential special needs) and the use of diverse methods and materials which enhance the learning of young children.

Children and parents are also important teachers of the young child. Siblings and older children can assist and be assisted by the outreach component on how to develop or bring appropriate materials which help pre-schoolers to learn. They need to be taught by the teachers what materials are relevant and how to use them with young children.

The students in the Home Economics B.Ed. program and B.A. program are also excellent resources for the development of materials (teaching/learning materials) for the centre. When students actually develop and test specific games, charts, toys and other materials, they truly understand the theoretical concepts of child development and learning which they have been taught. It should be stressed, however, that the materials developed should first and foremost reflect the general

principles of learning of young children, so that the children are not adversely affected.

Members of the community are also very important resources. Even if their children are not attending the pre-school, they can become involved. Members of the community can be mobilized to donate their time, materials and labour for the betterment of the centre and pre-school. Parents and members of the community could donate equipment and materials and help build the playground, and it is particularly important to draw upon the resources of the entire University community. In such a call for cooperation, many previously untapped talents and resources can be cultivated. The University community is extremely diversified and many individuals could be asked to make small contributions of their own talents for the pre-school and the centre. It should be recognized that in addition to involvement leading to increased commitment, meaningful involvement enhances the individuals' self-image. Consequently, not only the centre benefits, but also the individual participant and the University as a whole. Others who are valuable resources are members of businesses who in addition to wanting to serve the public and making a profit, desire to make a contribution to nation-building. Often they have broken lots or slightly damaged goods which they could give to a pre-school rather than to throw them away. Church groups also are very helpful in locating and providing materials for free. One of the most important resources is the person who will reach out for the centre and pre-school in order to obtain materials for free or for minimal expense. This person who assures the liaison with the community and others - whether it is a head teacher or someone from a higher level position - is the one who can bring together all of the resources and can raise the pre-school and child care centre to the level of excellence and model status which could be envisaged for the centre.

FINAL REMARKS

In conclusion, it is important to remember several points which this paper has tried to stress for consideration for the members of the Home Economics Department. Initially, the focus should be on meeting the needs of the children who will be there for the University students to observe and interact with. By meeting their psychological needs through an appropriate environment (facilities, materials and learning centres), the children will behave in a natural manner and develop as they should. In the process the University students and - potentially - researchers interested in children will be given a site in which theory and practice are tested and applied. If this is to be the case, however, certain principles concerning child development and guidelines for materials development which are discussed in this paper warrant consideration by members of the Home Economics Department at Kenyatta University.

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ANNEX

SOME MATERIALS WHICH CAN BE DONATED: SOURCES AND TYPES

This list contains some suggestions for materials available free from local merchants to use in classrooms. They represent only a sample of the many resources you will find in your area. Many of these materials are normally discarded; if you contact local businesses, shops or factories, and make your intentions known, they are quite often willing to save them for you.

Contractors and Building Supply Companies
Lumber, pipes and wire, wallpaper, linoleum, tiles, molding wood, sawdust, wood curls; one can make arrangements to go to a construction site when they are finishing a job; they will let you collect the scrap building materials.

Plastics Company
Trimmings, cuttings, tubing, scrap plastic and plexiglass.

Electronics Manufacturers
Styrofoam packing, printed circuit boards, discarded components.

Lumber Supply Companies and Furniture Factories
Scrap wood, damaged bricks, concrete blocks, dowelling, sawdust, wood curls, wood scraps for carving.

Hardware Stores
Sample hardware books, sample tile charts, linoleum samples.

Rug Companies
Sample swatches, endpieces from rugs.

Supermarkets and Outdoor Markets
Cartons, packing materials, fruit crates, large cardboards and materials from displays, discarded cardboard display racks, styrofoam fruit trays.

Department Stores
Fabric swatches (drapery and upholstery samples), rug swatches, corrugated packing cardboard, sample food cans and boxes, packing boxes from appliances such as washing machines, refrigerators, etc.

Phone Company (contact their Public Relations Department)
Excess coloured wires, telephones (on loan).

Electric Power Company (contact their Public Relations Department)

Telephone poles, wooden cross arms, steel ground rods, wire, large spools that can be used for tables, assorted packing materials.

Garment Factories and Button Manufacturers

A great source for accumulating a wide variety of materials -- yarn, buttons, scraps, decorative tape.

Camera Manufacturers

Cameras (on loan).

Leather Manufacturers and Leather Craft Companies
Pocketbook, Belt and Shoe Manufacturers

Scrap pieces of leather and lacings.

Billboard Companies

Pieces of billboard to use as posters, wall coverings.

Ice-Cream Stores

3-gallon ice cream containers.

Airlines

Plastic cups.

Container Companies

Large cardboard sheet.

Architectural Firms, Upholsterers, Textile Companies, Floor Covering Firms,
Kitchen Counter and Cabinet Makers, Wallpaper and Paint Stores

Colour samples, wood, linoleum and tile samples, formica squares, wallpaper books and scraps of all sizes.

Bottling Firms

Bottle caps, large cardboard tubes.

Window, Storm Door and Siding Companies; Soft Drink Manufacturers

Aluminum scraps.

Cleaners and Tailors

Buttons, hangers, scrap material.

Restaurant

Ice cream containers, corks, boxes and cartons.

Large Food, Candy and Soap Manufacturers

Sample cans and boxes.

Plumbers and Plumbing Supply Companies

Wires, pipes, tiles scraps, linoleum.

Tile and Ceramics Companies

Scraps of ceramic and mosaic tile; tile by the pound (inexpensive).

Paper Companies

Unusual kinds of paper are often available free in the form of samples, end cuts, or damaged sheets. Paper is delivered to paper companies in large cardboard tubes which are usually discarded. These make good chairs, tables, cubbies, etc. (See Building with Tubes, a publication of the Early Childhood Education Study).

Metal Spinning Companies

Shavings and scrap pieces.

Junk Yard and Scrap Metal Yards

Unlimited possibilities! Wheels of all shapes and sizes, all kinds of gears and moving parts from clocks, radios, fans, cars, irons, toasters, etc. Handles from doors, cars, knobs, broomsticks, hinges and fittings.

NOTE: Be on the lookout for packing materials wherever you go. Depending on the nature of the factory or business, they come in an infinite variety of materials, shapes and sizes.

PRE-SCHOOL CURRICULUM DEVELOPMENT AND PRE-SCHOOL MANAGEMENT

by
Margaret Kabiru[1]

INTRODUCTION

In the traditional societies in Kenya, child-rearing and socialization processes were handled with care and concern. The mother was the first socializing agent and provided the necessary emotional support for laying the foundations for life. This relationship was later extended to the other members of the family, particularly to older siblings, aunts and grandparents. The child, therefore, received adequate love, care and security during the early years. In this context, the child's physical, social, emotional and intellectual needs were catered for. However, with the rapid socio-economic changes that have taken place in Kenya, particularly after independence, the traditional ways of bringing up children have experienced change.

Traditionally, the extended family members lived in one homestead and were able to share the responsibility of looking after children. Today, new settlement patterns have emerged in which each family lives on its own compound, often fenced off from the rest of the homesteads. One of the consequences of rural-urban migration is that children are brought up outside the extended family set-up. Parents - particularly the mothers - often carry solely the responsibility of child rearing and caring. If outside assistance is required for child care, the care-giver may not show as much caring to the child as the mother or other family members would.

Many women have now opted for paid jobs or for self-employment. In both rural and urban areas, many women are engaged in income-generating activities. This means being away from the home and children for extended periods and devoting long hours either in the production or marketing of their products. Furthermore, more and more children are going to primary school, and older siblings are less available to look after their younger brothers and sisters. Generally speaking, changes in the family structure and in socio-economic activities imply changes in values, attitudes and methods of looking after children. There can be no doubt that these changes have forced families to look for alternative ways of taking care of their young children.

ORIGIN AND EXPANSION OF THE PRE-SCHOOL PROGRAMME

In Kenya, the first pre-schools were set up in the 1940's and were mainly located in urban areas; they largely catered for children of expatriates. After independence in 1963, there was massive expansion of pre-schools in response to the call of *Harambee* in nation-building. Today, pre-schools, apart from their custodial

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[1]Coordinator, NACECE, Kenya Institute of Education, Nairobi, Kenya.

responsibility, play a role in the socialization of the child. Many parents believe that pre-schools give children a head start in formal schooling.

The rapid expansion of pre-schools can be illustrated as follows:

> *In 1972, there were 8,000 pre-schools with an enrolment of about 300,000 children between the ages of three and six years. By the end of 1986, there were 12,192 pre-schools with an enrolment of 657,688 children. This enrolment represents about one-quarter of the children of three to six years of age in the country. By 1986, there were about 16,550 teachers working in pre-schools. In the last four years, the enrolment in pre-schools has increased rapidly, particularly in those districts where District Centres for Early Childhood Education (DICECE) have been established.*

This expansion, however, has not been matched with quality pre-school services. An important limitation in the provision of quality services has been the lack of trained teachers and a relevant curriculum.

OBJECTIVES OF PRE-SCHOOL EDUCATION IN KENYA

Pre-school education should enable children to:

(a) develop their mental capabilities;

(b) enhance their physical growth to become healthy human beings;

(c) enjoy living and learning through play;

(d) build good habits for effective living as individuals and members of a group;

(e) appreciate their cultural background and customs;

(f) foster their imagination, self-reliance and thinking skills; and,

(g) enrich their experience so as to enable them to cope better with other levels of learning.

MANAGEMENT OF PRE-SCHOOLS

Local communities, private individuals, many agencies (both governmental and non-governmental) are involved in the provision and development of pre-school

education and in their administration and management. Some of the involved groups include:

(a) Local Communities

Over 70 per cent of pre-school institutions in the country have been established and are being managed by local communities. These communities are responsible for the provision and maintenance of physical facilities, including provision of land, putting up of buildings, provision of furniture, employment and upkeep of teachers, management of the pre-schools, and sponsorship of teachers for training. The day-to-day management of the community-sponsored pre-schools is carried out by committees consisting of the parents and local leaders. There are recent efforts to attach these pre-schools to nearby primary schools so that the primary school Headmaster can be responsible for the overall administration and management of the feeder pre-schools.

(b) Voluntary Organizations, Religious Organizations and Companies

Many religious organizations have established pre-schools in the church/temple/mosque compounds. Firms, co-operatives, state corporations and plantations have established pre-schools for the children of their employees. Welfare organizations are also involved in the management of some centres.

(c) Women's Organizations

Organizations such as the KANU *Maendeleo Ya Wanawake* Organization, the Young Women's Christian Association, and the Mothers' Union have also played a significant role in the establishment of pre-schools. These organizations manage the centres through their local leadership and parents' committees.

(d) Private Pre-Schools

Most of the private pre-schools have been established in urban areas. They are managed by private individuals or private organizations; parents are not very much involved in the running of these centres.

(e) Government Involvement in the Management of Pre-schools

The Government agencies involved in pre-school education are:

- *Local Authorities*

  Many local authorities are assisting local communities in the provision of pre-school education by employing teachers, providing some materials and sponsoring teachers for training. Many local authorities also employ supervisors or social welfare officers who ensure the proper running of

pre-schools in their areas. The supervisors work closely with the local committees managing centres.

- *Government Ministries*

Various Government Ministries, particularly the Ministries of Education, Health, Culture and Social Services have a responsibility toward pre-school education. The Ministry of Health should be involved in the provision of health and medical services to pre-schools. The Ministry of Culture and Social Services has a role of encouraging parents to increase or improve the appropriateness of facilities for young children.

- *Role of the Ministry of Education*

The Ministry of Education recognizes the need for partnership with all the above agencies and plays a leading role through the provision of policy guidelines in early childhood education. The Ministry of Education is also responsible for training of pre-school personnel; development of curriculum; registration of pre-schools; inspection and supervision of pre-schools and related training institutions; and, the maintenance of standards in early childhood education.

To carry out these responsibilities, the Ministry of Education has established a national committee, the **Early Childhood Implementation Committee**, which advises it on policies, issues and the general development of the programme. The Ministry of Education has also set up the following structures:

Pre-school Section, Headquarters: This section deals with all administrative matters regarding coordination of all partners, both local and external, registration of pre-schools, coordination of Government grants and funds from external donors and provision of early childhood personnel at all levels. It is also responsible for the provision of policy guidelines for the pre-school programmes.

Pre-school Section, Inspectorate: This section at the Ministry's Inspectorate deals with the maintenance of professional standards of the programme. It coordinates the inspection and supervision of schools and training institutions, as well as teacher training. It is also responsible for the administration of teachers' examinations.

National Centre for Early Childhood Education (NACECE): This centre was established in October 1984. It deals with professional matters, including the development of training programmes for early childhood education personnel, curriculum development, research and evaluation and provides advisory services to pre-school sponsors.

The **NACECE** is located at the Kenya Institute of Education and receives financial support from the Bernard Van Leer Foundation. It has a network of sub-centres at the district-level known as **District Centres for Early Childhood Education (DICECE). NACECE** organizes induction courses for newly-recruited trainers and for local authority supervisors. Short courses are also held for specific identified needs for the continued professional growth of the trainers.

DICECE: These district centres are charged with the responsibility of the training of pre-school teachers, the development of localized curriculum, research in early childhood education and giving general direction to the programme at the local-level.

Nine **DICECE** were established in January 1985. Six of these were supported by UNICEF and the others by the Ministry of Education. Six more **DICECE** were started in 1986 (four supported by the Aga Khan Foundation and two by the Ministry of Education). In 1987, three additional **DICECE** were supported by the Ministry of Education and by the end of 1988, there were twenty-seven **DICECE**. Eighteen of these are full-fledged **DICECE**. They have one or two pre-school officers. The activities of **DICECE** have given rise to a lot of improvements in early childhood education. For example:

* The intake of teachers for training has risen from 240 per year in 1984 to over 1000 in 1988. Teachers undergo a two-year in-service programme which consists of six residential sessions of a total of eighteen weeks. Trainers give on-the-job assistance to the teachers during term-time. The trainers also monitor the provision of a rich learning environment, child stimulation, fostering of total growth and development and the involvement of the community. In community involvement, teachers are expected to solicit and guide the community in the provision of suitable facilities and learning materials, the establishment of feeding programmes, and in ensuring that the children are immunized, safe and adequately socialized. In 1988, an "alternative course" was launched. This course caters for those teachers who do not meet the minimum academic requirements for the regular course which is KCPE 30 points (from 1989 onwards, it will be 42 points) or CPE 15 points. The mode of training is similar to the one used for the regular course, though the examination requirements are slightly different.

* The **DICECE** have made contributions to the development of local curriculum materials such as locally-designed play and learning materials. They have also, through research and community

involvement, collected local stories, poems, riddles, songs and games. Story books, poems and riddles are now available in twenty mother tongues. Research is ongoing in a number of languages. In workshops, the collected games are edited in a joint effort.

* Through the mobilization of the communities, the **DICECE** have led to improved pre-school facilities, increased and improved feeding programmes and community participation in curriculum development and the development of learning materials. There is still more to done in the areas of public awareness and the soliciting of funds to support the programme at the local-level. Transport is also a major problem in most of the areas. Furthermore, there is a need for training to upgrade the **DICECE** personnel to enable them to keep pace with changing and dynamic communities. The **DICECE** are accountable to the District Education Officer (DEO) for the day-to-day operations. Through the DEO they coordinate in their work with other officers in the Ministry of Education and with other Ministries.

Field Administration

The field administration, including Inspectors, Teacher Advisory Centre Tutors and Education Officers, participate in the supervision, assessment of teachers and coordination of various sponsors in early childhood education. The role of these officers is particularly important in those districts which do not have **DICECE**.

CURRICULUM DEVELOPMENT

The development of relevant curriculum and support materials is a pressing need in early childhood education. Curriculum development is carried out at both the national and local level to fulfill the needs of trainers, teachers and children in different cultures and environments. Curriculum and support materials are developed for various levels - training of trainers and support to trainers; training of teachers and support to teachers; pre-school children; parental and community education including public awareness and advocacy.

In developing the curriculum, the programme has adopted the participatory model whereby the trainers, parents, local communities and other users are involved. This approach liberates the trainers and the teachers from following the pre-school curriculum rigidly and, therefore, encourages them to improvise and utilize the physical and human environment without restraint. In addition, the participatory approach develops confidence, a sense of achievement and satisfaction in all those involved because they feel they have contributed in the learning of their children.

The programme also uses an approach which integrates closely curriculum development, training and research. Research, for example, has been undertaken by trainers and teachers during training on materials available in the environment which can be used to develop various learning and play materials. Some trainers and trainees have found out through experimenting with various materials that certain ones produce various colours which are very good in painting activities. Similarly, they have been able to get various types of dyes and glues from the locally available materials in the environment. Parents and the community are also involved in the process.

National Curriculum Materials

The national curriculum materials contain broad guidelines that give a general direction on various issues. They ensure that a certain level of acceptable standards is maintained. These materials comprise syllabi, guidelines, trainers guides, teachers' manuals, public information pamphlets or a newsletter, films, videos, etc.

Local Curriculum Materials

Local curriculum materials are developed to meet the needs of different ethnic groups and to incorporate unique local features. These materials facilitate the socialization of children in their cultural norms and values from an early age. The process of developing the curriculum locally involves the participation of the community and the parents in deciding what is relevant for their children. This has been recognized as an important factor and it can be expected that the commitment towards curriculum implementation will be greater in a community which has actively participated in its development.

Curriculum for Training Trainers

NACECE organizes a nine month training course for early childhood education trainers. Twelve weeks of the course are allocated for contact sessions to cover the necessary theory and information and to facilitate sharing of experiences. During the rest of the period, trainers are assisted on-the-job by **NACECE** and are involved in collecting and documenting information on the status of children, services available and problems facing children. A guide for the training of trainers was developed in 1984 to serve as the basic resource for the course. The following areas are covered in the course:

1. national goals of education
2. objectives of early childhood education
3. philosophy and history of early childhood education in Kenya
4. child development with emphasis on the Kenyan child
5. health and nutrition
6. community education and mobilization
7. pre-school administration and management
8. pre-school curriculum
9. research, measurement and evaluation
10. planning and organization of training programmes
11. development, management and utilization of resources
12. issues of development in Kenya
13. field experiences

Plans are underway to develop trainers' guides. The materials which are being developed for teachers are also an important resource for trainers. A special library for early childhood education and care is being set up at **NACECE** to reinforce training at the national and local-level.

Advanced Courses for Trainers

To support continued growth of the trainers, it has been recommended that certificate diploma and degree courses be established. **NACECE** will soon embark on the development of the curriculum of specialized courses and for the certificate and diploma courses while Kenyatta University will be charged with developing the degree programme.

Curriculum for Training Teachers

As mentioned earlier, pre-school teachers are trained through a two-year in-service programme. The syllabus for the course was developed in 1985. It contains the national goals of education; the objectives of early childhood education; child growth and development; pre-school curriculum which contains general methodology, planning, management and administration of pre-schools and also the objectives and content of specific activity areas (e.g., language, mathematics, creative music and movement, environmental, outdoor and physical activities); health and nutrition; development, status, administration and management of pre-school education in Kenya (this also contains communication skills and approaches to working with the community); general knowledge which focuses on the family, housing entertainment, recreation, personal grooming and presentation, moral and spiritual development and current affairs; field experience which incorporates teaching-learning, development and use of locally improvised materials, catering for intellectual, social, emotional and health needs of children, and working with parents and the community. The course is practical and emphasizes active participation of teachers in their own learning. Continuous assessment

is part of the training and teachers can accumulate 40 per cent of the examination marks through continuous assessment. The alternative course covers all the above areas. There are additional areas, such as: English language and *Lugha ya Kiswahili*. The teachers can accumulate 50 per cent of the examination marks through continuous assessment. During training, teachers use the *Guidelines for Pre-School Education in Kenya* (1984) as the basic resource.

Teachers' Manuals

To support the guidelines, manuals are now in the process of being published, covering the following areas:

- management, organization of pre-school centres and language activities
- mathematics and environmental activities
- creative activities, music and movement, outdoor play and physical activities

Health Education Materials

A set of manuals for health education are in manuscript form, ready for publishing. These cover the following units:

- personal hygiene and environmental sanitation
- maternal and child health
- some common childhood diseases and child health records
- child safety and protection
- food production, preservation, storage and usage

Child Development

A child development manual is also in the final stages of preparation.

Manuals for Material Development

Workshops have been targeted over the years to develop manuals giving suggestions on improvisation of toys and the learning materials which will be useful for teachers, trainers and the community.

Folklore Materials

Books of stories, poems and riddles are now available in 21 mother tongues which are also used as training and teacher support materials. Research is being carried out on local songs and games. A set of similar materials are being developed in English for urban areas and other centres where English aids are used as a medium in the pre-school.

Audio-visual Materials

A number of films or videos have been produced to support training and awareness at all levels. These include:

(a) It is like giving a child "*Githeri*": depicts a training methodology through participation.

(b) Learning through Play: depicts an appropriate teaching/learning methodology in pre-school centres where children learn through play using locally available materials.

(c) *Tutengeneze*: depicts a material development workshop portraying the methodology of running such workshops and also the exploitation of the local environment in developing learning and play materials.

(d) Kabernet Community Nursery School: depicts the process of decision-making and activity in developing a community pre-school.

(e) Not Only the Children: depicts community involvement in the development of early childhood education in diverse Kenyan cultures and environment.

Materials for Pre-School Children

The folklore materials in the 21 languages are presented largely in pictorial form so as to make them more appropriate for children's use. Sets of play cards have also been produced, but their dissemination has been limited. There is, however, a major shortage of suitable and relevant print materials for children at this level. A number of concrete materials for learning, play and development have been developed through exploration of the environment and the participation of children, teachers, parents and members of the community. **NACECE** and **DICECE** develop prototype materials which can be used to guide the communities in their attempts to locally develop materials with available resources.

Materials for Parental and Community Education and Public Awareness

Projections have been made for the development of support materials for this area such as pamphlets on specific topics (e.g., feeding programmes, mental stimulation, adjustment problems, etc.). These could be done in *Kiswahili* and mother-tongues. There is also a need to develop radio programmes on various issues in early childhood education. A needs assessment survey has just been completed which will assist in deciding on specific materials to be developed and on the priorities for parental and community education.

THE FUTURE

Through partnership, **NACECE, DICECE** and all sponsors of early childhood education have made great strides in the development of the programme. However, a lot remains to be done in relation to:

- increasing enrolment in pre-schools;
- expanding the capacity for training of teachers;
- providing relevant curriculum and support materials at all levels of the programme;
- setting up a viable production and distribution system for pre-school materials;
- providing policy guides with regard to employment of pre-school teachers;
- increasing research capacity in early childhood education; and,
- establishing and maintaining networks that ensure effective linkages in the programme and with other relevant institutions and services.

The current commitment of the Government to the programme, and the mode of involving the grassroots through exploitation of local services, wisdom and operational process should enable the country to face these challenges.

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NEEDS ASSESSMENT OF RURAL COMMUNITIES WITH EMPHASIS ON POPULATION ISSUES

by
Grace W. Maina[1]

INTRODUCTION

Rural development can be defined as the improvement of the living conditions of rural communities. This can be measured through levels of achievement in terms of agricultural production to generate income and meet nutritional requirements; provision of adequate health and educational services, adequate housing, clean water and sanitation, communication and other infrastructures to facilitate the provision of these basic needs and social amenities. Despite the noticeable effort that Kenya has made towards the improvement of the living conditions of the people since the attainment of independence, there still remains much to be done in many parts of rural Kenya.

Underdevelopment is characterized by high infant and child morbidity and mortality rates, high prevalence of malnutrition, low life expectancy, high fertility rates, high dependency ratio, low per capita income, high levels of illiteracy, low levels of female education, etc. Although much has been done in Kenya to suppress these negative elements of underdevelopment, the rate of population growth - which is among the highest in the world - continues to hamper efforts toward improving life conditions, especially of rural populations.

To achieve a harmonious self-sustaining rural development, several attempts have been made using an integrated rural development approach. This has been a result of the understanding of the interdependence of the various components of rural development. Attempts at integrated rural development include, for example, the "Special Rural Development Project" of the early 1970's, and the "Integrated Agricultural Development Project" of the late 1970's. Neither of these initiatives, however, addressed at the fundamental level issues of rapid population growth. Other than recognition of the effects of population growth on the economic growth of the country, there was no clear population policy during this period in Kenya's development.

Kenya Government Policy on Population

As early as 1965 when the Sessional Paper No. 10 on *African Socialism and Its Implications for Planning in Kenya* was prepared, Kenya had already appreciated the problems in achieving economic development goals because of the high rate of population growth, which was then in excess of 3 per cent per annum.

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[1]Senior Agricultural Officer (Home Economics), Head of the Rural Youth Branch, Ministry of Agriculture, Nairobi, Kenya.

The salient Government objective, at that time, was to achieve and maintain population growth at 1.7 per cent per annum, which was close to the global average. In that Sessional Paper, family planning education was given a high priority. In line with this statement, the official National Family Planning Programme was launched in 1967, leading to the integration of family planning into the Maternal and Child Health Division of the Ministry of Health. The 1969 National Population Census confirmed the Government's growing concerns with the rate of population growth (reported as 3.3 per cent per annum (Central Bureau of Statistics/CBS Population Census, 1969). As a result, the Government decided to launch a five-year Family Planning Programme with the objective of reducing the population growth rate from 3.3 per cent in 1975 to 3.0 per cent in 1979. However, the 1979 census data indicated that instead of declining, the rate of population growth was actually increasing (**Republic of Kenya**, CBS, 1979 Population Census). The main feature of the National Family Planning Programme was to provide family planning services without incorporating an educational component aimed at influencing people's attitudes towards changing family size norm.

During the Fourth Development Plan, the Family Planning Programme was to be supplemented by intensified educational activities with an emphasis on quality of life and the value of small families (**Republic of Kenya**, 4th Development Plan, 1979-83). The strategy adopted was the provision of family planning services, information and education on the relationship between family size and family welfare and the promotion of conditions which through research have been shown to reduce fertility (e.g., education and employment opportunities for women).

As a further Government commitment to reduce population growth rate, the National Council for Population and Development (NCPD) in the Ministry of Home Affairs was launched in 1982 (**Republic of Kenya**, Sessional Paper No. 4 on Population Policy Guidelines, 1984). The mandate of NCPD is to formulate population activities in the country. This was a bold step toward ensuring consideration of population issues in development planning in the future. In 1984, the NCPD came up with population policy guidelines which called on various Government ministries including the Ministry of Education to integrate population and development issues into their regular activities. Thus, the Ministry of Education incorporated population issues into the primary and secondary school curricula and through the Kenya Institute of Education (KIE) developed pupils' books and teachers' guides in Family Life Education for Standard V and Form I. This indicates a need to prepare teachers during their training for both primary and secondary schools in this new dimension of population and family life education.

The Population Growth Trend in Kenya

Kenya's population growth rate is among the highest in the world. Since the first population census in 1948, there has been a steady increase in the number of people from 5.4 million in 1948 to 16.1 million in 1979. According to the 1979 population census, the growth rate stood at 3.8 per cent per annum. **Table 1** shows this trend.

TABLE 1				
	1948	1962	1969	1979
Total Population	5,408,000	8,636,000	10,943,000	16,136,000
% rate of growth	--	3.3	3.4	3.8

Source: CBS - 1962, 1969, 1979 Population Census

The frightening population situation in Kenya is currently due not to the actual number of people, but to the rate at which the population is growing compared to the rate of the country's economic growth. The high population growth rate is a result of decreased crude death rate (from 25 per thousand in 1948 to 14 per thousand in 1979) and increased birth rate (from 50 per thousand to 52 per thousand) in the same period. The decline in mortality can be attributed to improved health care and nutrition, and modernization and consequent changes in attitudes and practices with regard to birth spacing. As a result, there has been high fertility. In the CBS Kenya Fertility Survey (1977/78), it was reported that the average family size was 8.1 children. During consequent years however, family size was reported to be declining - 7.7 children per woman in 1984 (**Republic of Kenya**, CBS, 1984) and 6.7 children per woman in 1989 (**Republic of Kenya**, NCPD Demographic and Health Survey, 1989).

The implication of high fertility in population growth is the high proportion of population under the age of 15 years and the high dependency ratio. In the 1979 census, the dependency ratio was indicated as 113 per 100 in the 15-59 year age group which was a gross under-estimation, taking into account the people in the same age group in schools or under training and the high rate of under-employment. As a result of early marriage and high fertility prevalence in the rural areas especially among communities characterized by low education among women, generation gaps are drastically reduced. This, in turn, reduces the number of years in which population would be expected to double. Assuming that each first born girl starts procreating at the age of 15, by the age of 30 she is already a grandmother and a great-great grandmother at the age of 60.

The impact of this rate of population growth if not checked would result in a situation described by **Malthus** (1830) when he said that if no preventive measures were used to reduce the rate of population growth, other means like starvation, disease,

war, etc. would take their toll. This is a real threat, and we have already seen such situations in our own lifetime.

Impact of High Population Growth on Socio-Economic Development

Those who have travelled to different parts of Kenya need not read any books to know that Kenya's population is getting out of hand. This is particularly noticeable in the high potential areas such as the Vihiga Division of Kakamega District, Kisii District, many parts of Central Province where segmentation has reached uneconomical sizes aggravated by overuse and mismanagement and where, through urbanization, tracks of high potential agricultural land has been taken up by buildings. In Nairobi City, a trip on foot from the Hilton Hotel through Ronald Ngara Street, Machakos Country Bus Stop towards Gikomba Market at five o'clock in the afternoon tells the population pressure story. Human congestion, shoulders rubbing against each other is the style of walking. This trend of population increase is a real burden not only to the Government in its attempt to provide essential services such as education, health services, employment, etc., but also at the household level where these demands are real evidence of the results of having more children than one is able to provide the basic needs for. Preliminary results of a needs assessment survey in Nyeri, undertaken by FAO and the Ministry of Agriculture in 1989/90 indicate that women are more aware of the problems involved in feeding large families than men. As such, it is at the individual level where campaigns to reduce family size should be directed, as these decisions are very personal.

CURRICULUM DEVELOPMENT AND ITS RELATIONSHIP TO NATIONAL DEVELOPMENT

The future of every country lies in the hands of its young people. Hence the type of education planned and given to these young people determines what, how much and by which means they can contribute to the development of their country. During the colonial era, education curricula in Kenya were geared towards white collar jobs. Although agriculture was also taught, the fact that manual work on agricultural plots was used as punishment for pupils tended to create a negative attitude towards agriculture. Hence, agriculture was not considered as an honorable occupation. In addition, because of lack of economic returns from the small farms Africans worked on, the educated young people could not visualize how they could make an adequate living from the land.

A study of Curriculum Development in Kenya in 1972 (**Republic of Kenya**, Ministry of Education, 1972) noted with concern the narrow scope of the curriculum, its emphasis on didactic, rote-learning, lack of practical and creative activities and ignorance of the environment in which the children learnt. As a result of this critique, a curriculum development commission studied the situation and made recommendations as to the development of a course for boys and girls to be called Home and Community Studies in upper primary classes and primary classes. The investigational

methods of teaching advocated at the primary level was also suggested for use at the secondary level. Despite these recommendations, a course in Community Studies was not developed.

The introduction of rural development aspects in the Home Economics curriculum would create an opening to the use of the community as a learning and teaching tool as well as helping the community learn and benefit from these activities. This approach to teaching and learning has similarities with the New Primary Approach (NPA) introduced for the lower primary classes in the mid-1950's, just before Kenya gained independence. The child was the centre of activity and was encouraged to learn from her/his environment.

The new 8-4-4 system of education has in mind both the interest of the child's future occupation and the environment in which s/he will live. As such, the system seeks to prepare the child in such a way that s/he will be able to adapt to the future and the prevailing circumstances. A main feature of the 8-4-4 system of education is the emphasis on practical skills which may help the learners to be creative in generating future self-employment in the midst of stiff competition on the job market. The former system of education, the 7-6-3 system (seven years primary, six years secondary and three years university education) emphasized cognitive learning, that is, imparting of knowledge. The new 8-4-4 system stresses the need for psychomotor and affective learning through inclusion of subjects such as home science, agriculture, arts and crafts, Christian religious education and social ethics. Such subjects aim at providing various skills and developing positive attitudes to these occupations and respect for oneself, society and the nation.

Previous to the introduction of the 8-4-4 system, however, the above types of learning were provided to a smaller extent through extra-curricular activities like learning practical agriculture and home-making activities through 4-K Clubs and Young Farmers Clubs. The introduction of the 8-4-4 system of education now relies on the Ministry of Agriculture to be more vigilant in providing practical agricultural activities to youth in institutions to supplement what the 8-4-4 agriculture syllabus offers. It should be noted that due to the very heavy course load of subjects to be covered by the 8-4-4 system of education, only a general introduction to the vocational subjects can be achieved (e.g., only offering the principles and broad techniques of a particular subject-matter). The students are left to follow their specific areas of interest later in life.

With the knowledge that the majority of Kenyans live in rural areas and that most schools in Kenya are situated there, it is logical to look for ways in which educational institutions can improve the welfare of its immediate community and vice versa. In Kenya's history, schools have played an important role as the centre of development in many rural communities. A fitting example is the early missionary schools in Kenya and their role in both education and social economic development. The introduction of an outreach programme at the Home Economics Department of Kenyatta University will not only be useful in developing needed competencies in the students in training, but also give examples of ways in which they can be helpful to their immediate communities.

HOME ECONOMICS AND RURAL DEVELOPMENT

In simple terms, home economics is an applied science that addresses itself to the requirements of day-to-day living at any given time and place. The discipline must therefore prepare those involved in it to meet the challenges of influencing the survival and comfort of mankind. This calls for its practical application among individuals, families and communities. The extent to which a home economist can contribute towards the improvement of the welfare of the community among whom s/he lives will depend very much on the extent to which s/he is able to analyze and understand their needs. Successful identification of community needs will also depend on the competence of the home economist. Identification of the necessary competencies of the home economist in this perspective will help curricula planners in specifying behavioural goals based on the identified needs.

The primary mandate of Kenyatta University has been to produce teachers for secondary schools and to some extent for teacher training colleges. However, quite a few of these graduates branch off to other areas of employment - for example, to the Ministry of Health as nutritionists and dietitians, to the Ministry of Agriculture as home economics extension workers, as project/programme officers in non-governmental organizations with rural development programmes and in the catering industry. In most of these deployment areas, the home economist who has gone through the current Kenyatta University curriculum finds her/himself deficient in certain areas. **Marangu** (1975) notes that there has been increased demand for vocational curriculum which would provide students with capabilities transferable across jobs to meet the demands of various occupations.

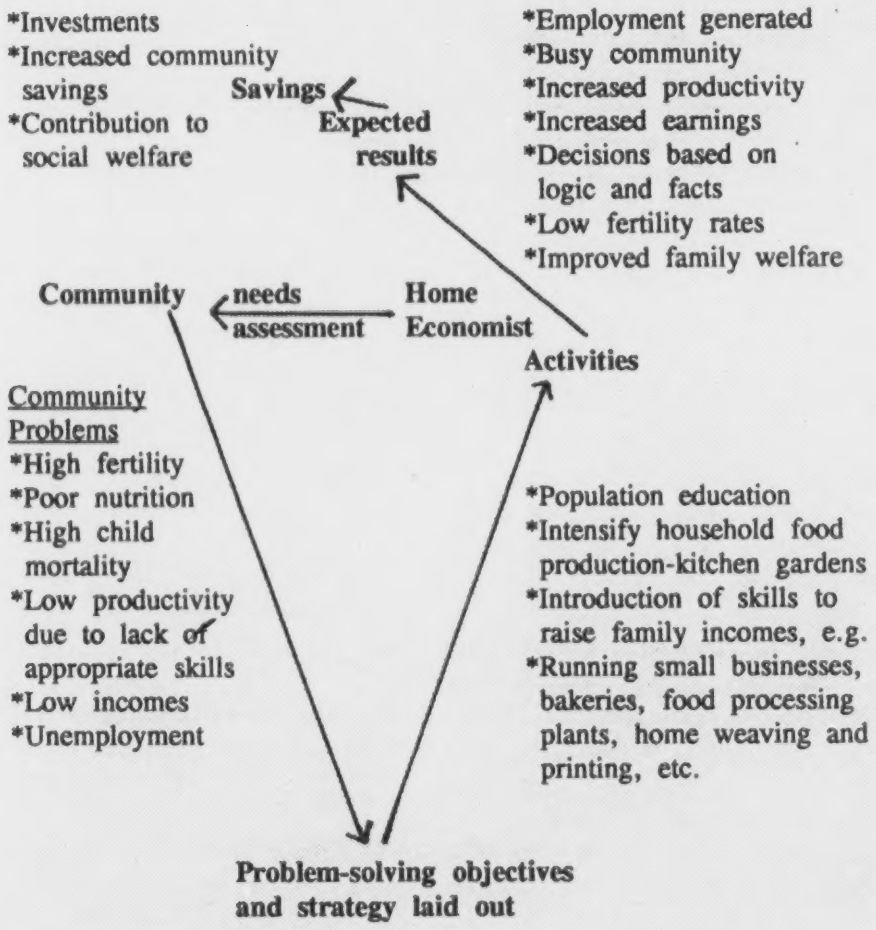
Generation of employment was one of the major objectives of Kenya's 1983-1989 Development Plan. The non-wage agriculture, farm and rural non-farm employment accounts for over 70 per cent of total employment in the country (**Republic of Kenya**, 1983). Sessional Paper No. 1 on "Economic Management for Renewed Growth" (**Republic of Kenya**, 1986) stresses the importance of employment creation to absorb the rapidly growing labour force as a result of the fast-growing population. Introduction of the 8-4-4 education system aims to prepare youth with practical skills that will be of immediate use after they leave school at various stages. The system is expected to stir up potential practical skills in youth which could be used in the generation of self-employment.

Introduction of rural development aspects in the future Kenyatta University Home Economics curriculum with emphasis on a practical approach towards solving community problems will be indirectly generating employment for the members of the community whose outputs will be used in improving the welfare of the community. For example, the following conceptual framework in **Figure 1** demonstrates this.

The model suggests some of the important areas in which home economists can contribute positively towards the improvement of the welfare of the community in which s/he works full-time or part-time. To be able to do this s/he needs some of the competencies implied in the following model.

Figure 1

CONTRIBUTION OF HOME ECONOMISTS TO RURAL DEVELOPMENT



ASSESSMENT OF COMMUNITY NEEDS

A bottom-up approach to rural development has been emphasized and was introduced in Kenya in 1983 through the strategy "District Focus for Rural Development" (**Republic of Kenya**, 1983). This strategy puts planning in the hands of District Development Committees (DDCs) which manage intra-district development planning and implementation. In very simple terms, this approach means starting where the beneficiaries of the development activities are giving them a strong voice in

deciding what they feel they need. The stock-taking of the expressed needs of the community for planning purposes is what is referred to as community needs assessment. One never plans in a vacuum for a virgin population. There is always something existing in the community worth taking note of that would enhance or inhibit the achievement of the set objectives. Hence, the needs assessment helps to establish the baseline data against which the achievement of a project or programme can be measured at the evaluation stage.

Needs Assessment of Population Issues

In relation to population issues, the most important area is the establishment of knowledge, attitude and practice (KAP) of the target audience of the population. In this regard, one would seek to find out the communities' awareness of, and effect of rapid population growth on adequacy of resources in general, on health of the mother and child and total family welfare; the attitude towards family planning in general and the use of modern and traditional methods of birth spacing and birth control. Specifically, the following needs to be established in planning population and development intervention activities:

* *Socio-economic status and its implications on family size;*
* *Family size and composition;*
* *Fertility patterns and birth spacing;*
* *Average age of women at first birth;*
* *Prevalence of adolescent pregnancies;*
* *Level of women's education;*
* *Awareness of effect of frequent pregnancies on women's health;*
* *Infant and child morbidity and mortality rates;*
* *Youth's awareness of population issues;*
* *Attitude towards population issues (e.g., discussions on reproductive behaviour among couples; perceived ideal number of children per couple; and child sex preference);*
* *Family planning and child care;*
* *Awareness of fertility management methods and use of contraceptives; and,*
* *Desire to learn about population issues.*

In a rapidly growing population, the objective of establishing the above information would be to provide ways and means of slowing down this high growth rate. Action needs to be taken at the household level. This seems feasible only through adopting small families as a norm. However, a small family should not be conceived as a goal in its own right but as a means to achieving a better quality of life for those who are born. Limitation of family size is also a very highly individual matter. Hence, only reasons based on self-motivation will lead to adoption of family planning methods. This is a very important point that Kenya has considered and respected as expressed in the Fourth Development Plan (**Republic of Kenya**, 1979).

knowledge is gained from schools, hence the importance of preparing teachers to be able to handle population issues in schools.

Awareness of Fertility Management Methods and Contraceptive Use

It has been clearly shown that the rural communities in Kenya are aware of contraceptive methods. Results of the Demographic and Health Survey (**Republic of Kenya**, 1989) indicate that more than 90 per cent of married women in Kenya know at least one modern method of contraception and 88 per cent approve of family planning. However, only 45 per cent have used a contraceptive method at some time in their life. This indicates a big gap between awareness and practice of contraception. Family limitation requires realization of the need, motivation and use of fertility control methods. These methods must however be feasible for the couple, affordable, and effective. The pre-requisites of the adoption of family planning methods can be achieved through an education programme based on the needs of the people.

METHODS USED TO ASSESS NEEDS OF RURAL COMMUNITIES

Community needs assessment (or community diagnosis as it is sometimes referred to) provides a basis for making informed decisions on the need and type of intervention required and the basis of measuring expected achievements. The resources available are a major determinant of the success of the diagnosis and planned interventions.

An important dimension of a rural development course is to provide students the opportunity to develop skills that will help them contribute to rural development. This, therefore, calls for procedures that can be fitted in the time frame that will be devoted to this course. The methods and procedures used to incorporate this course should consider the competencies the home economist needs and the cultural patterns and attitudes of the communities towards developmental issues.

In community needs assessments, either quantitative or qualitative measures, or both, can be used in the survey to explain the situation of the community. Whatever method is used, this will depend on the type of information required, the time, equipment and financial resources available, the level of accuracy required and the skills of the investigator. However, cross-sectional surveys would be most suitable for this purpose as they are less time-consuming and therefore less expensive. They are fast in generating data for use in intervention activities.

Distinction between Quantitative and Qualitative Measures

The quantitative component of the survey seeks to establish facts usually on quantifiable issues, while the qualitative measures look to understand and interpret certain aspects of the community. The main distinctions of qualitative and quantitative research have been summarized by **Debus and Novelli** (1988) as follows:

Socio-Economic Issues and their Implications on Family Size

The effect of poverty on fertility has been very simply and vividly put by **Birdsall** (1980) through a family fertility behaviour model which describes a vicious cycle where the parents see children as a source of satisfaction (consumption goods) and investment for the parents' old age. The issue of opportunity costs involved in the rearing of these children is seldom evaluated. On this basis, more children are born to insure their survival which is not guaranteed because of the very poor conditions in which they are born and reared. Well-to-do families have very little time to look after large families because they are usually very busy looking for and enjoying their wealth. To them, children are born to meet the psychological needs of being a parent. Hence, only few children will be needed to meet this need.

Family Size and Composition

An understanding of the size and composition of what is considered to be an ideal family will explain why people go on having children even when they would advocate a small family. For example, the need and the importance of having a male child is still an obstacle in adopting small family size in some communities. According to the findings of the Kenya Demographic and Health Survey (**Republic of Kenya**, 1989), Central Province has the highest proportion of women who want to stop child-bearing. But in another on-going survey in Nyeri District of Central Province, undertaken by FAO and the Ministry of Agriculture in 1989/90, preliminary results indicate that when a couple has reached its ideal number of children, and they happen to be all girls, the couple will continue to have children with the hope of having a boy. The Kenya Demographic and Health Survey has also indicated that although men do not indicate their desire for male children, it is men who condition women to favor male offspring. This issue needs to be brought out very clearly if the attitude towards sex preference in children has to be addressed.

Adolescent Pregnancies and Level of Women's Education

The Kenya Demographic and Health Survey (**Republic of Kenya**, 1989) has indicated that 55% of Kenyan women become mothers before they reach the age of twenty. In addition to the contribution this makes in accelerating the rate of population growth, it has serious health implications on the health of the adolescent mother (**Bogue et al.**, 1977). When child-bearing starts in adolescence, it is usually accompanied by high fertility and short birth intervals. Young women still have many years of child-bearing ahead of them. In the event of early motherhood, in most cases schooling is interfered with, leading to low levels of education for such women. Low levels of education among women has been associated with high fertility and prevalence of malnutrition among their children (**Maina**, 1988; **Ikamari**, 1985). The preliminary results of the community needs assessment on population issues (FAO/MOA, 1989/90) indicate that youth are very much aware of how conception takes place, the high rate of population growth in Kenya and its implications for family welfare. Much of this

Qualitative	Quantitative
Concerned with depth of understanding	Concerned with level of occurrence
Answers to the question "why"	Answers to the questions "how many", "how often", etc.
Looks for motivations	Looks for actions
Judgement subjective	Judgement objective
Uses discovery method	Wants to prove
Exploratory Research	Definitive
Gains insight into	Measures level of
Interpretive	Descriptive

Quantitative Measures

Quantitative measures use a formal approach to data collection whereby a structured questionnaire is used in which the needed data is entered. For example, the mean age at which women start giving birth in a given community; the average number of children a woman is likely to give birth to during her reproductive age (fertility), etc. Such facts can only be established by taking stock in figures of the prevailing trend. This should however be based on randomly-selected samples for the results to be a true representation of the community under study.

Commonly Used Sampling Methods

An understanding of sampling methods and their suitability to different situations is necessary. This is important to avoid subjectivity in the selection of the sample. **Random sampling** is a technique where every subject or item in the study population is given an equal chance of being selected. An example of this is selection through casting lots. Another form of random sampling is systematic sampling where homogeneously distributed items of study are picked

systematically, for example, picking every -nth number from a register of homesteads in a community as long as the homesteads are not arranged in any order. In community surveys, **cluster sampling** is also used whereby instead of selecting subjects from the community, clusters of households become the sampling units while a list of clusters form the sampling frame. **Stratified sampling** can also be used by dividing the area of study into sub-groups with similar characteristics and then carrying out a simple random sampling from within these sub-groups. For example, in a study of a community which comes from different ecological zones, this would require first identifying these different zones and then conducting a simple random selection of the item of study from these different zones. This would be followed by allocating the number of items chosen according to the size of the area (proportional allocation) after which simple random sampling is applied. Estimates for the total population are attained by combining the data from all the strata.

Study Tools

In most community surveys, a questionnaire is used in which responses to pre-prepared and well thought-out questions are recorded. The questionnaire is prepared to meet the objective of the study. In other words, a study looking for answers related to population issues will necessarily address itself to such areas as previously outlined in the paragraph on "Needs Assessment of Population Issues". A questionnaire can also be used to gather descriptive information using open-ended questions aimed at seeking people's opinions and attitudes. The questionnaire should be simple to follow, non-ambiguous and easy to administer. If the investigator is using assistants to help in the administration of the questionnaire, these assistants should be thoroughly trained to administer the particular questionnaire.

Data Collection

In collecting data, procedural supervision techniques are important at this stage. These include taking note of whether the data collection is going on as planned, how many respondents have been interviewed, how many have refused to be interviewed, completeness of the information collected, etc. The latter is a quality control measure. Obtaining a high response rate will depend on how easy it is to establish contact with the household and especially if they all go out to work. Repeated attempts at a time when the members of the household are likely to be in will, however, increase the response rate.

Data Processing, Analysis and Presentation

Data processing involves the manipulation of data collected so that it is in a format that can be analyzed. This includes sorting out the areas of investigation (variables) and presenting them in a framework for ease of data entry. Whether the data will be analyzed manually or by means of a computer is very

important. Careful labelling of tables in all cases is very important even if it is for personal use. A quick look through the data can sometimes reveal data that do not make sense indicating a possible error in data entry. Preliminary analysis examines the frequency distributions of all variables under investigation. In most cases this examination may indicate the need for further in-depth analysis, (e.g., the relationship between the age of respondents and their attitude to family planning if the socio-economic data indicates that the study population is a homogenous one.) Simple indices can be calculated such as means, percentages, rates and simple associations. Data can be presented in tables, histograms, pie diagrams, scattergrams, two-by-two contingency tables, etc. This depth of analysis may be all that is required by the survey to give quantitative measures needed to reveal the status of the community. However, further in-depth analysis may be required to indicate a complicated association of two or more variables.

Qualitative Measures

The qualitative components of a community needs assessment look into characteristics that can be used to define the population under study. These measures cannot rule out the elements of subjectivity as the interpretation of what is perceived depends entirely on the opinion of the investigator. This method, however, is very useful in helping to bring out the role and the importance of those treasured but hidden cultural values and attitudes that would be a hinderance to new interventions. **Scrimshaw and Hurtado** (1987) have stressed the importance and role of qualitative measures in community needs assessment. The qualitative measures are usually obtained through informal interviews based on a general outline of the topics of interest. They may also have room for unexpected issues that arise in the course of the interview. They illuminate quantitative findings. The informal interviews include conversation, observation, participants' observation and focus group discussions.

Conversation: This method is used in gathering information from individuals as opinion leaders and small groups of people.

Observation: This method can be used in combination with other methods or on its own. It relies on non-verbal clues to suggest what is actually happening. These clues include the kind of behaviour and events observed.

Participants' Observation: This method requires the investigator to live with the community to be able to observe the social-cultural context of the community in order to understand its day-to-day way of life.

Focus Group Discussions: This method involves informal interviews with small groups of people (six to twelve). It is used to obtain in-depth information that may not be revealed by a structured questionnaire. It is also used to cross-check information obtained with a large number of people or supplement the

information on community knowledge, beliefs, attitudes and perceptions about certain aspects of the community.

Information Recording: In informal interviews the proper recording of important issues from the discussions is very important. Good note-taking by the investigator is an asset. It is also advisable to use a tape recorder especially for focus group discussions because it is not always easy to remember all that was discussed. A replay of the tape will also clarify some points and allow more time to think about the important issues before drawing conclusions.

Data Analysis and Presentation

Qualitative measures used in community needs assessment are used for descriptive purposes only. It is considered incorrect to try and quantify responses from informal interviews unless, for example, in focus group discussions, many group sessions were held. In this case however, the first few group discussions should suggest the need for a quantitative survey which is quicker and cheaper to conduct. The respondents' comments should be taken at face value for they may have deeper interpretation (e.g., if it is known that having a son in the family is very important, a response indicating that this is not so should not be taken lightly, as it may be said just to please the investigator.)

A regrouping of the research findings into the key areas of interest will help the flow of the final report, while categorization of the data according to, for example, users and non-users of contraceptives, may also help in designing intervention strategies. The preparation of the report from informal discussions generally involves: developing a plan for analysis; analyzing the content of the discussions; synthesizing discussions; global synthesis of the interviews/group discussions addressing each objective with the revelations of the interviews and then coming up with recommendations.

Final Report of the Needs Assessment

The report should give a statement of the purpose of the study and background information justifying the need for the study, followed by a description of the study community giving reasons for specific community selection. General community data should include geographical/ecological setting, demographic data, communication, socio-economic data, educational facilities and other infrastructures and social amenities. A map of the study area helps in the description. A detailed outline of the methodology and equipment used is followed by the results. The results are discussed in full to come up with conclusions and recommendations.

IMPLICATIONS FOR CURRICULUM DEVELOPMENT FOR RURAL DEVELOPMENT IN UNDERGRADUATE HOME ECONOMICS TRAINING

The objective of this discussion paper is to generate recommendations on how home economists can get involved in community and rural development with special emphasis on population issues. Several issues have been discussed to illuminate areas of emphasis. The basic understanding of the factors involved in accelerated population growth rate is one basic area that seems to be very important. These factors must be appreciated if a change of attitude towards large families is to be achieved and this is one broad area that the curriculum should address. The other area of curriculum content discussed relates to research methods and their application to community diagnosis. This broad theme implies coverage of sub-themes such as stating clearly the objectives of the needs assessments and outlining clearly the chronological order of activities such that the order of activities follow a well thought-out sequence. In other words, this introduces the element of project proposal writing even before the stage of project preparation is reached. The art of data collection, competencies in preparing study tools such as the questionnaire or the art of conducting informal interviews is strongly implied. These could be full courses in themselves, but at the undergraduate level perhaps only those essential skills required for the defined tasks could be taught and practiced. Data processing and analysis implies the need to have basic computer knowledge and its use in data management. We are in the computer age and although some data can be managed manually, there is a need to follow and understand computer-analyzed data. This is not an end on its own but it calls for more competencies, for example, understanding basic statistics and statistical terms and their application to data analysis and interpretation. These implications refer to any area of community needs assessment and they should therefore be addressed in a broad sense so that this experience can be applied in many situations of community needs assessment as need arises.

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ROLE OF HOME ECONOMICS IN RURAL DEVELOPMENT PROJECTS

by

Paz Concepcion-Lutz, PhD[1]

Rural development projects are problem-centered, and people's problems are inter-related. If home economists are to participate fully in rural development, and if the profession is to be responsive to the needs of its rural clients, then the focus of home economics education in rural development should be on a broad range of competencies essential to helping rural families improve their lives.

The rural home economists must not only acquire knowledge and skills in the various areas of home economics and agriculture, but they must also have skills in planning, decision-making, community organization, management of resources, and communication. Essentially these skills and structures must be based on the knowledge of local problems, must promote and increase women's participation and must improve information-sharing. The balance in the training of the rural home economists should reflect the real-life needs of rural people, directed to their multiple roles in development. It should be noted that training for rural home economists should have a practical basis, should incorporate participatory approaches to working with rural people and develop technical competencies on the kinds of help needed by rural families. The reorientation of the home economics curriculum at all levels of education - primary, secondary, pre-professional and teacher education - must be people and community-centered. A UNESCO-assisted project in Sierra Leone known as *"Training of Primary Teachers for Rural Areas"* reformed not only the teacher training programme but also the primary school curriculum to make it relevant to families' interactions with their environments.

In Bunumbu Teachers College, where the project was based, one of the goals was to develop a new cadre of teachers who are not only "learning facilitators" but also change agents, (e.g., village animators and community educators). A requirement for teacher certification is a successful planning and implementation of a rural development project with the participation of a local Community Development Council.

There is a whole list of development projects being implemented by United Nations agencies and Non-Governmental Organizations which attempt to provide training in productive work skills for women, or improve their living conditions and environment. The Skills Development for Self-Reliance (SDSR) is a regional project for Eastern and Southern Africa, covering the countries of Kenya, Lesotho, Somalia, Swaziland, Tanzania, Uganda and Zambia. Administered by the International Labour Organization (ILO), it has moved from training and skills development to the direct application of these concepts in assisting rural women and youth to prepare and initiate projects in business and employment-generating activities. In Sokoto, Nigeria, a traditional Muslim cattle-raising area, women have joined their husbands in improving

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[1]Technical Adviser, United Nations Development Programme/World Bank Community Development Project, Jos, Plateau State, Nigeria.

cattle-raising practices and meat production - all under the umbrella of *"Women in Health"*.

For those concerned with areas of project development, rural life and their implications for home economics, there is a hidden curriculum which needs attention. This matter centers itself around the human resource potential of women in the rural areas and the negative overtones and problems revolving around the third-world women. One hears and reads of HIV infection and AIDS, prostitution, female circumcision, destitute mothers abandoned to raise and feed their children by themselves, traditional marriage customs that treat women as chattel or property, unequal or no education for women, back-breaking labour for women, etc. The list of negative overtones about third world women is long and depressing. Yet we know of the influence of rural women, both the unschooled and schooled, upon their daily lives and on the economic viability of the countless rural communities that dot each and every third world country. The sooner men realize and are educated in the fact that women's roles and chores are the heart and core of development, the better will be our rural development projects and communities.

Over the past decades, many assumptions have been made about tasks in development - assumptions, such as that it is necessary to transfer skills, it is necessary to provide capital and that it is necessary to create adequate and appropriate internal and external structures in order for development to take place. Until recently, rural development was considered synonymous with agricultural output and economic growth. But today, a larger view equates rural development with far-reaching transformation of the rural and economic structures, institutions, relationships and processes in any rural area. It means extending to the mass of rural population the benefits of economic and social progress. It endorses efforts to increase productivity in rural areas, to improve environmental sanitation and hygiene, to utilize literacy and non-formal education to raise the functional effectiveness of the rural people and to provide gainful employment. An important factor in the development processes is mobilizing the creativity of the community to collectively determine objectives of their development, the design and implementation of the development programmes and to share fully its benefits through equitable access to its resources, inputs and services.

PLANNING AND IMPLEMENTING RURAL DEVELOPMENT PROJECTS

Current experience and learning from a multitude of rural development projects carried out in different countries reveal critical factors to effective and cohesive project development. Six key concepts stand out in rural development project planning:

* community participation;

* building or strengthening community organizations or groups, local financial institutions, economic and cultural structures, such as the already established local infrastructure, the chieftaincy system;

* use of local materials and resources for economic, social and cultural activities;

* enlisting the support and cooperation of the sectors - private, public, voluntary, with local project people;

* developing a holistic, integrated programme that uplifts many different facets of life in the project community for all types and groupings of people; and,

* education and skills training.

DEVELOPMENTAL STAGES IN A RURAL DEVELOPMENT PROJECT

Each rural development project passes through a cycle of stages, that with some variation is common to all from the inception of the initial idea to the completion of the project. These stages include: project identification, project preparation, appraisal/approval, implementation, monitoring and evaluation (see **Table 1**).

1. Project Identification

Project development starts out by first identifying needs and opportunities in the sector. This stage calls for a collection of ideas and proposals to determine whether the project in question can be given priority. Basically a "desk study", it gathers information on the problem and its elements, selects projects that might meet the needs of individuals, families and communities and the aspirations of the sponsor(s) and conducts a feasibility study. The basic question to be answered during the identification stage (as well as throughout the development of the project), is: *"why should one undertake a particular project?"* Assuming initial approval has been given to the identification report, this stage sets in motion the more detailed phases of project preparation.

2. Project Preparation

An important aspect of the project preparation stage is the feasibility study. It will determine if the project can be done. The feasibility study should not only include information on the economic, social and cultural conditions of individuals, families and communities but also institutional or funding source aspects, project schedules of various activities, logistics and support services, management and staff requirements. Project preparation establishes the project plan. It requires inputs from many sources - involvement and consultation with community groups and members (e.g., women and women's groups), NGO's, agencies and specialists in the related sector, people to be served by the project, government ministries and funding agencies. Such inputs play vital roles towards acceptance or approval of the project.

TABLE 1

DEVELOPMENT STAGES FOR RURAL DEVELOPMENT PROJECTS

Identification

- gather information on the problem and its elements
- collect project ideas and proposals
- select projects which meet the needs of the clients
- undertake pre-feasibility study
- prepare an *identification report*

Preparation

- feasibility Report on the technical, financial, institutional and operational aspects
- establish the project plan/schedule of various components and who should do it
- prepare the *project data sheet*

Appraisal/Approval

- comprehensive review of all aspects of the project
- correct any flaws in the identification and preparation stages
- project approval

Implementation

- detailed design and workplans of project components
- procurement of equipment, goods and services
- execution of activities
- developmental operations
- periodic/continuous monitoring of project inputs and processes

Evaluation

- monitoring of project results
- collect information on changes and improvements in community, and among beneficiaries
- feedback for future projects

3. **Appraisal/Approval Stage**

The appraisal stage provides a comprehensive review of all aspects of the project - technical, institutional, economic, financial and human resource development - prior to its approval. Any flaws that might have escaped the project team at the identification and preparation stages are corrected. Project approval is the culmination of development planning activities.

4. **Implementation Stage**

Implementation is the stage where the planned project is transformed from an idea to reality, from a concept to a process. This stage is to make the project as efficient and effective as possible. The project team develops a coordinated, harmonized work calendar of all component activities. The operation phase of the project refers to the activities of the project beneficiaries or users. This stage ends when beneficiaries are able to understand, apply new skills or services, and play a major role in sustaining the objectives of the project. Successful projects focus continuously on the needs, attitudes and inputs from project users and beneficiaries. Their participation in all stages from identification and preparation up to evaluation is essential.

EVALUATION OF RURAL DEVELOPMENT PROJECTS

Evaluation processes actually start at the beginning of the project and keep in mind the objectives of the project, the efficiency of the activities, the effectiveness of the processes and the quality of the outcome or products of the project. Monitoring as an integral part of evaluation provides the opportunity to determine how well the activities are progressing and accomplishing their objectives, to analyze the procedures used in implementing the plan and to feed information back on the changes produced among the beneficiaries or users and on the effective utilization of the allocated resources. On-going evaluation (monitoring) determines weaknesses in the implementation, looks for potential problems and identifies areas where the project needs to be modified or augmented. At a final stage, evaluation determines the impact of activities and specifies the lessons that have been learned so that future projects can be planned or improved accordingly.

FINAL REMARKS

Each stage in the development of rural development projects raises issues that have implications for the educator and the home economist, and for every future educator and home economist, from the Dean on the Planning Board to the teacher or lecturer in the classroom (see **Table 2**).

TABLE 2

DEVELOPMENT MATRIX FOR A RURAL DEVELOPMENT PROJECT

	Project Preparation	Implementation	Evaluation and Planning
Identify	problems, needs, objectives, community inputs, learning resources, trainees, trainers	educational facilities and resources, staff inputs, teaching-learning objectives, roles and tasks	objectives, inputs, processes, products
Develop	identification report, feasibility study, project plan	subject scope and sequence, instructional materials, field tests, training activities	evaluation plan and tools, monitoring scheme, evaluation report
Evaluate	baseline data, socio-economic conditions/ constraints, funding aspects, logistic support, work schedule	inputs, processes, products	results, lessons to be learned

Each must be a polyvalent person - capable of wearing four hats: the hat of the teacher/curriculum developer, the hat of the rural extension worker, the hat of the community organizer and the hat of the human resource developer. For each of these hats, the rural women and the communities they live in should be the centerpiece.

Let us ask ourselves: "Can we meet this challenge?"

There was once a teacher assigned to a rural community. On her first day in this typical village school, she arrived to find the pupils out playing in the grounds. As she was about to unlock her door, two children came to her, and one said: "You must be our new teacher..." She asked them how they knew, and the other said: "You have the key."

Today, I say the same to you: "You have the KEY."

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APPROPRIATE TECHNOLOGY AND HOME ECONOMICS

by
Raphael J.A. Kapiyo, PhD[1]

INTRODUCTION

In Kenya, as in other developing countries, development can no longer be conceived without the inclusion of technology. More so, the technology referred to is always qualified as "appropriate technology." This implies that whatever the aspect of national development, the technology utilized, either as transferred technology or developed, must be carefully selected and developed to meet the needs of the target users. The situation with appropriate technology, however, has not been a smooth one due to problems with interpretation and application of the concept. More seems to be said than done about its relative and/or anticipated contribution to aspects of national development (for example rural development). Although some work goes on in the area of appropriate technology which is productive, it still needs to be understood better and the field exploited more extensively. This paper discusses how appropriate technology can contribute to or be utilized in a home economics training programme.

APPROPRIATE TECHNOLOGY AND ITS DOMAIN

The term "appropriate technology" refers to the suitability of technology to a given situation. It arose as a result of problems with transfer of technology and it was understood that technology developed in a particular context needed to be adapted to the situation where it would be utilized, taking into account that different communities had their own unique ways of tackling their problems.

A brief account on the meaning of appropriate technology indicates that it makes a lot of sense and its impact on the quality of life of people is critical to national development. Its strongest point is that it is a process which gives human life the central position and is based on utilizing human potential individually or collectively to solve "real life" problems and to make individuals more self-reliant.

One of the founder thinkers of appropriate technology, E.F. Schumacher, was concerned in the early 1970's about the current pursuit of profit and progress which promoted giant organizations and increased specialization, which has resulted in gross economic inefficiency, environmental pollution and inhumane working conditions (**Schumacher**, 1973). He challenged the doctrine of economic, technological and scientific specialization, and proposed a system of "intermediate technology" which is based on smaller working units, communal ownership, and regional workplaces utilizing local labour and resources. The proposed technology system is one which allows for participation and also offers opportunities for decision-making (e.g., a technology that can be sustained by the consumers).

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[1]Appropriate Technology Center, Kenyatta University, Nairobi, Kenya.

This view has been upheld and further expressed by practitioners in this field. According to **UNICEF**:

> *Appropriate technology is not a new esoteric discipline but is simply the reasoned use of technology within a given community's capability and within the well-developed methodology of participatory community development.* (**UNICEF**, 1980, p. 5)

In other words, technology should begin with well-defined needs (based on problems experienced in the particular community), and critically identify possible solutions to the problem, utilizing knowledge and skills and locally available resources of the people in constructing the solution, calling upon external resources (knowledge, skills and materials) as deemed necessary. Appropriate technology may also imply choice of technology which involves considerations of technical efficiency and physical testing (**Swift**, 1980).

Today, there is reasonable agreement on some of the more desirable characteristics which a technology should have to be appropriate in a particular situation. These include: use of local materials, skills and finance, cultural compatibility, environmental safety, meaningful work, etc. (**Warpeha**, 1985). An important aspect of appropriate technology is that it must be contextualized. In other words, it should be perceived within the context of the traditions and customs of the society, the socio-economic structure and the ecological status of the area. As **Powell** (1982) notes, innovations which offend local customs or susceptibility must be avoided.

Considering the demands of daily living, especially in the rural areas where "modern" technologies are less available, one's survival and productive capacity are determined by the technologies at hand. Improved quality of life would, therefore, depends on the extent to which people would be aware of the potential of natural resources surrounding them, whether they could develop the necessary knowledge and skills which could enable efficient exploitation of the natural resources, and whether they could strengthen and improve their previous ways of doing things. These are important experiences, especially if identified and developed.

Appropriate technology in many instances is mistakenly viewed as a particular category of technology which is low-level and only routed to satisfy the poor population. This is a misconception. In fact, the philosophy behind appropriate technology is one of attaining "suitability" or suitable technology for a given situation or purpose and "participation". It goes further and argues for realization and "critical awareness" about the possibilities and alternatives to achieving appropriate solutions to needs. For example, in sunshine-prone areas, it is possible to harness solar energy to cook food, warm water or refrigerate or even to provide lighting. In an agricultural country like Kenya, what technologies can be developed to help harvest agricultural produce, to store without pest damage, or to irrigate crops? If paper is a problem in many of our schools, we can make paper readily and cheaply from the biomass materials available. How about utilizing water power to help raise and pump water to areas of need? In many cases, we wait for ready-made solutions to our problems without making attempts at solving the problems ourselves.

The understanding of appropriate technology is central to a) creating a capacity to think out solutions to problems, rather than remaining in a condition of dependency or perpetuated poverty because one cannot get or afford something; b) developing knowledge about what is available in one's surrounding and elsewhere and what is possible to attain from them; c) evolving skills which can enable the harnessing or adaptation to what exists; and, d) believing that there is not only a single solution to a problem and always sticking to certain solutions to problems. This is what happens at the *Jua Kali* industries to some degree, but, specifically, what the appropriate technology movement is about.

If one considers home economics in circumstances where water is scarce, and when available is unclean, it should be possible to provide information or even initiate a cheap water supply (e.g., the Chinese water pump, water catchments, etc.). A solar still can also be used to distill water. Creative thinking is vital in the training of the home economist.

A fundamental aspect of appropriate technology is its relationship with traditional technology. According to **Powell** (1982), "a new technology must be the child of the old". The technology produced should capitalize on the practicalities and parameters of the old technology. It should be continuous but with improvement or innovation on the identified critical parameters:

> *The traditional technologies used in agriculture and craft industries in developing countries incorporate the accumulated wisdom of the centuries. Before any attempt can be made at innovation, the existing methods must be carefully studied. They will invariably be found to be based on much knowledge of local climate, soils, materials and energy services as well as to be generally well-adapted to the social and cultural attitudes of the people. This knowledge must be built upon rather than replaced* (**Powell**, 1982, p. 3).

This is the same tone that appropriate technology, whenever it is developed, should maintain. Every activity must begin from whatever knowledge and skills have been utilized earlier. The domain of appropriate technology extends right from the evolution of ideas about the problem situation, through the development of knowledge and skills to tackle the problem, to the dissemination of the ideas and products to the beneficiaries. The latter point is an important one because it has to do with extension. Lack of appropriate extension methodologies or outreach has in many instances led to failure of some appropriate technologies.

THE PLACE OF APPROPRIATE TECHNOLOGY IN RURAL DEVELOPMENT

Rural development is a prominent agenda item in developing countries. It is an area of great challenge because of the multiplicity of variables that are involved in raising the quality of life of rural people. According to **UNESCO** (1984), it is the application of scientific knowledge and technological know-how that would enable humanity to come to terms with and to control its environment, thus contributing

significantly to social progress in the developing countries. Although it could be true that scientific knowledge and technological know-how are critical in rural development, their source, development and degree of applicability would still raise questions.

Rural areas by their nature need a different strategy because of the varied nature and activities that continue to take place. According to **Chambers** (1985), rural poverty is often unseen or misperceived by outsiders, those who are not themselves rural or poor. He contends that researchers, scientists, administrators and field workers rarely appreciate the richness and validity of rural people's knowledge, or the hidden nature of rural poverty. This is, of course, why despite poverty rural people can be self-reliant and sustain their livelihood. The position taken by appropriate technology, if strengthened, is an important one in alleviating some of the problems faced in the rural areas. The fact that appropriate technology is multi-disciplinary and uses as its main approach the "participatory approach" makes it compatible with problem-solving in rural areas.

Rural development entails many deeply-entrenched problems that need to be tackled, for example:

a) **Agriculture**: The problems in farming include inability to till land properly, farm produce treatment, processing, storage and preservation. In Bura settlement schemes for example, small holder farmers are unable to store without pest destruction on their maize grains.

b) **Water**: Securing clean water or water in sufficient quantities is a big problem in many rural areas. Storage tanks are not found in many places. People have to walk long distances to procure water.

c) **Energy**: Energy to support cooking is an expensive item in time and distance of collection. Because fuelwood is the main source, its availability is important. It tends to be lacking in many areas.

d) **Health and Nutrition**: Feeding families with a balanced diet, or even the provision of food in sufficient amounts is a common problem. Sanitation facilities in many disadvantaged areas are seriously lacking, if not posing a health hazard.

These are just a few examples to indicate the scope of problems which have to be tackled in rural areas. In many ways, these problems are inter-connected and finding solutions calls for the coming together of different disciplines. Appropriate technology by its nature could construct certain solutions to these problems but what would be the role of a discipline like home economics? The problems in rural development are also gender-related. Women generally struggle to feed their families, fetch water, collect firewood, work in the farms, etc. Considering the role of appropriate technology in these circumstances, it would be expected that suitable technologies could be developed which conform to women's needs. For example, water collection, harvesting and storage techniques could be introduced and women themselves could play a part in their construction or installation. At the same time, improved

wood stoves which have been developed could be disseminated. Of course, in these conditions appropriate technology devices would still have room for modification. In general, it is along these same lines that appropriate technology would play a part in rural development.

A critical element of rural development with respect to appropriate technology is training. Developing technologies and initiating a system which is self-producing requires that community members be trained on how to produce technology devices and disseminate them. Public education and information exchange for awareness creation is a method of sensitizing people about technologies. Application of the usefulness of technologies and their impact on communities implies a change of attitude which calls for an effective extension mechanism.

Recorded failures in adoption of certain appropriate technology devices in most cases have resulted from an ineffective extension scheme, or absence of one altogether. In fact, this area of extension is where disciplines like home economics could play a substantial role in promoting rural development. What is important to the users is whether a device can be shown to work successfully. This could be demonstrated by trained personnel who can put the device to the best possible use.

APPROPRIATE TECHNOLOGY AND THE HOME ECONOMICS CURRICULUM

There already exist a number of appropriate technologies which have been developed. As a result, there are areas of new knowledge, useful skills, processes and products that have evolved which are now being utilized. The following are some of the areas:

a) Energy

Energy is the prime mover is an area where many tangible results have been realized. More attention has been focussed on renewable sources of energy.

(i) Solar Energy
- photovoltaics for electricity production
- solar grain and vegetable driers
- solar still for water purification
- solar water heater
- solar cookers

(ii) Wind power
- windmills, especially for water pumping
- aero-generators for electricity generation
- windmills for grinding

(iii) Hydro-power
- mini-hydroelectric generators
- hydraulic rams
- grinders
- water sawing mills

(iv) Water pumps
- mechanical pumps for shallow wells
- Chinese pumps made from car tires

(v) Biomass energy
- improved stoves (for charcoal, wood, agricultural wastes, institutional stoves)
- charcoal refrigerators
- biogas for cooking, lighting and refrigeration
- baking ovens

(vi) Pedal power
- for water pumps
- transportation
- potter's wheel

b) Low-cost building materials

- water tanks
- grain stores
- walling
- roofing sheets and tiles

There are other forms of appropriate technology which result from pressures to produce or through improvisation. Generally, all of these are quite applicable to the East African situation. Each of these areas could be used as suited to the particular circumstances. An important aim of all the technologies is to make work easier.

Considering home economics which has to do with home management, foods and nutrition, clothing and textiles, early childhood care, among others, it is clear that it is concerned with utilization of technologies for better results. It could be food production and preservation or resource and material development for childhood care. In both cases, there might be a need for appropriate technology for those purposes. The thinking entailed in appropriate technology for innovation, improvisation or always trying other solutions is also important in achieving results within home economics.

The fact that the cultural content in which much of the work is to be done, even for rural development, is so diverse, means that home economics can only be useful to all if it adopted a different approach. The rural and urban areas are different and, at the same time, problems of home management are uniquely different from one home to another. In many homes in the rural areas, electricity is not available, hence, the use of electrical power in devices even for cooking is just not possible. This

might mean that baking is not a possibility for homes where no trial has been made on firewood or charcoal stoves. The need for versatility in thinking should be emphasized. In a similar manner, it could be argued that because of the nature and model of training that home economists have undergone, they have never quite focussed on the problems of rural development. The training seems more concerned with learning how to do things the way modern equipment could allow at the expense of more valid and well entrenched approaches. Even today, it is not clear where traditional methods of cooking, utensils and diets are placed within the training of home economics (e.g. dried meat or fish preparation, or the preparation of some vegetables, further still the traditional utensils). It would seem that the training did not focus on these. Even with cookstoves, it is only recently that charcoal stoves or woodstoves are being used sparingly, especially where electricity or gas exist as alternatives. It could possibly be a question of attitudes.

As would be expected in any situation, improved practices should be an offspring of rural traditional practice. In a way, the lack of continuity or discontinuity between traditional practices and improved "modern" practices has been a major obstacle on the extent of contribution of home economics to rural development. This is where appropriate technology could play a more significant role in home economics, because by its methods it could improve the particular devices or ways of doing things to suit the needs. In fact, this is where the training along the lines of the 8-4-4 education system will make its impact. The goals of the 8-4-4 system of education emphasize practical application of knowledge to real-life problems and thus the link between home economics and appropriate technology is established.

The Home Economics Syllabus at Kenyatta University

A critical look at the previous home economics syllabus of Kenyatta University indicates almost no room for improved methods or devices through appropriate technology. The approach and even the topics were not geared to helping rural development directly. Even the approach in foods and nutrition was decontextualized and bent on sustaining the developed country style. The courses which came close to rural development were household equipment and home management, but even for these the focus was, for example:

> *"Evaluation of various major household equipment, in terms of construction choice use, maintenance and storage, related market surveys."*
> **(Kenyatta University**, 1988, p. 75)

The small-scale household equipment was neglected. The argument here is not that the home economics curriculum should not concern itself with "modernity", instead it should cover everything, but mostly, focus on areas of great need such as rural development. It is in this area where the impact of appropriate technology would be realized.

Considering the general objectives of the home economics syllabus within the 8-4-4 education system (which focusses on home management, foods and nutrition, clothing and textiles, consumer education, child care), it is clear that there is room to

tackle a number of problems in different situations. Some aspects of the general objectives which are realistic include:

> *"...the learner will have acquired basic knowledge and skills related to all aspects of Home Science...practiced principles of hygiene...developed the ability to understand and adapt to environmental social and economic changes... developed the ability to improvise resources where necessary...creative ability in the selection, preparation and use of a wide variety of foods...acquired basic knowledge and skills in the use, storage and preservation of foods...acquired relevant knowledge and skills in Home Science to make items for house and income-generating activities."* **(Kenyatta University**, 1988)

As the objectives suggest, the home science syllabus would have to work very closely with appropriate technology or introduce a unit on appropriate technology as applied to home economics at the institutions of higher learning. The syllabus has topics like:

- materials used in construction
- disposing of refuse appropriately
- pollution within and around the home
- improvising cooking equipment
- purification of water
- construction of shelters
- methods of heating in the home
- home environment improvements
- student participation within the community
- food preservation methods

To be able to handle some of these units, some knowledge and experience on these topics must be tackled at a higher level, where they can do more on these issues. Even for those who get employed elsewhere, such as the Ministry of Agriculture, these topics are still very relevant and could make the role of home economics more effective in rural development.

The domain of appropriate technology covers a number of topics in this syllabus as the above example shows. This means that the approach in training in home economics must emphasize the characteristics of appropriate technology which include flexible thinking, innovation, always being open to alternative solutions, possessing knowledge and skills in appropriate technology development, and understanding the impact of technology as part of training. There must also be a fieldwork course which is aimed at identifying problems in rural development which are related to home economics. It could be expected that the socio-cultural network in the communities which forms the basis of animation and the initiation of change, could be tackled. The issues that home economics deals with are central to life in the home and community.

The use of locally relevant technology devices is an important aspect of home improvement. Apart from training philosophy which is slanted towards appropriate technology, the home economics courses should utilize the appropriate technology devices where possible. In the home there are a number of areas where appropriate

technology could be applied to improve the home environment --- in the kitchen with cooking appliances and utensils, food storage and preparation, sanitation, materials for building construction, energy in the home, etc. For the home economist, not only is the utilization of the appropriate technology devices or learning about them important, but, even more so, the communication of the ideas of appropriate technology in home economics and the promotion of the use of such technology.

SOME CONSIDERATIONS/STRATEGIES OF APPROPRIATE TECHNOLOGY IN THE LIGHT OF CURRICULUM PLANNING AND DEVELOPMENT OF HOME ECONOMICS 8-4-4 TRAINING AT KENYATTA UNIVERSITY

a) Home Economics and Rural Development

The home economics course should be broad-based with focus on relevant issues for rural development. The course should attempt to answer some of the problems that are involved in sustaining life in the rural areas. The graduates of the programme should be those who could integrate themselves and be realistic enough to assist in the areas of need.

b) The Appropriate Technology Philosophy and the Home Economics Curriculum

The problem-solving approach should be integrated into the home economics curriculum. The learning process should not be conducted as if all solutions to problems already exist. Creativity, innovation and invention should be promoted since the issues encountered would in some cases not have direct answers. This would entail understanding the impact of various technologies and the utilization of suitable and relevant technologies.

c) Field Extension Courses in Home Economics

The home economics programme should offer courses which include actual field work in the (rural) communities. These courses would focus on extension methodologies in different sectors. They should not only be aimed at people who become teachers, but also be offered to suit the needs of those entering other sectors like agriculture, health, industry, etc.

d) Participation in Rural Development Activities

Given the trends of development in many developing countries, field courses are important components of a home economics programme. The idea is to keep abreast with the changing conditions in the home and

communities. Field work should offer opportunities for dialogue and participation in rural development activities aimed at discovering more from different communities.

FINAL REMARKS

In conclusion, it can be stated that the home economics curriculum could be strengthened by the incorporation of appropriate technology ideas and devices. Both home economics and appropriate technology need each other because of the support and significance that they have for national development.

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INCOME-GENERATING ACTIVITIES, RURAL DEVELOPMENT AND THE ROLE OF HOME ECONOMICS

by
Julia K. Gitobu, PhD[1]

INTRODUCTION

The rapid development and expansion of the education system in Kenya since independence has been a major factor in facilitating opportunities for employment in both formal and informal sectors. In order to accelerate growth in the economy, the Government continues to promote development of skills and attitudes necessary for self-reliance, self-employment and proper management of major resources such as time and labour (**Republic of Kenya**, 1988). The majority of school leavers in Kenya live and work in rural areas. There is need to equip them with relevant knowledge and skills to enable them meet their basic needs and to contribute to the development of their community and the society as a whole.

The rapid population growth in Kenya continues to increase the pressure on the available economic resources in both rural and areas. Rural-urban migration, especially among the younger generation, is associated with the search for employment. In order to retain the vast numbers of school leavers living in the rural areas from migrating to the urban centers, there is urgent need to create and sustain viable employment opportunities in the countryside. In response to this need, the Government of Kenya is paying special attention to: (1) the promotion of active development in rural areas; (2) the reorganization of the educational system to provide technical skills which can promote economic independence and self-employment; (3) the promotion of business interests in both formal and informal settings (**Republic of Kenya**, 1986).

Home economics, as a profession, can actively participate in this process; it can provide opportunities which facilitate the development of skills for income-generating activities. This paper reviews the various types of income-generating activities currently in existence in rural areas and describes the extent to which women are involved in such activities. It discusses constraints experienced in the promotion of income-generation activities and makes several recommendations on ways home economics can increase participation in promoting income-generation activities for sustainable development.

DEVELOPMENT, EDUCATION AND EMPLOYMENT

Despite the high rate of urbanization in Kenya, more than 80 per cent of the country's population live and work in the rural areas. In view of this, the Kenya Government rightly recognizes the need to find better short-term and long-term remedial

[1]Chairperson, Department of Home Economics, Kenyatta University, Nairobi, Kenya.

measures to reduce the problems of under- and unemployment by creating a balance of opportunities between rural and urban settings.

In conjunction with the District Development Focus Committees, the Kenya Government is promoting the informal sector in efforts to create more jobs. Although self-employment absorbs only a small fraction of the labour force at present, the potential exists to expand small-scale industries and services to include more people especially in the rural areas. It has been suggested, for example, that more entrepreneurs need to venture into new products, services and markets. In Sessional Paper No. 1, entitled "Economic Management for Renewed Growth" (**Republic of Kenya**, 1986), the Government's position regarding this issue is clarified thus:

> *The informal sector suffers from a negative public image, yet it possesses many positive characteristics and has a vital role to play in contributing to renewed economic growth of the country. Informal sector activities conserve scarce foreign exchange, require very little capital to create jobs, rely primarily on family savings, often provide their own skill training at no cost to the Government, and are a prime training ground for future African entrepreneurs.*

It is the positive contribution of the informal sector, for instance, that has increased with the participation of "*Jua Kali*" artisans and others with innovative ideas that can be translated into income-generating ventures.

With the current focus on rural development, the Government needs support from individuals, families and communities. While some have expressed concern over lack of adequate participation of rural people in relevant development projects, others have noted that development which has occurred has been mostly the result of self-help rural development projects. It is for this reason that **Chambers** (1987) in his publication on rural development in the developing world challenges the energetic and entrepreneurial people in those areas to contribute their undeniable role in rural development.

The success of small-scale trading or businesses has been generally influenced by the traditional organizational structures in various geographical areas of the country. According to **Mbithi** (1973) and **Ogot** (1981), such organization is reflected by the degree of social control, group discipline and individual participation which creates a strong force that could promote or retard progress. Recognizing and understanding cultural and social values are critical in the process of initiating development. Thus, the rationale for district focus development is critical.

Specific studies on the operation of small-scale businesses in the rural parts of Kenya indicated that the majority of business owners use family or individual funds to establish and sustain their businesses (**Harper**, 1972; **Ng'ethe & Wahome**, 1987; **Gitobu**, 1989). But large numbers of individuals are unable to raise enough capital to set up and operate their own businesses. These studies show that very few traders have access to collateral funds for loans. Few women are fortunate enough to obtain such loans. Sole proprietor businesses remain very small in size and often show little or no growth.

Education

Education has played a vital role in promoting development in all spheres. Since Kenya's independence in 1963, there has been concerted effort by the Government to devise a system of education which addresses the social, cultural and economic needs of the society. The current 8-4-4 system, initiated in 1985, is designed to do exactly that. The change in the educational system was facilitated by the realization that there was a weakness in the previous system due to its inability to adjust to changing aspirations of Kenyans (**Wanjigi**, 1983). As underscored in the National Development Plan (1989-1993), (**Republic of Kenya,** 1988), the education system is designed to help the graduates of each level to be equipped with skills needed to face demands in agriculture, small-scale enterprises and other forms of self-employment. The system is also intended to make a smooth transition from formal general education to general but specialized training for work and self-reliance. One of the aims of the new system is to promote self-fulfillment through adequate training which provides necessary knowledge, skills, attitudes and values. A major goal of any educational system is to help members of a society learn the ways of surviving and living within that society.

Employment and Income-Generating Activities

Because Kenya's previous educational system tended to prepare people for employment in "blue or white collar" jobs, self-employment was never really accorded sufficient attention. In fact, self-employment was generally viewed as an alternative for those who failed to get adequate education. With the prevailing high rate of population growth, accompanied by a steady increase in the rate of unemployment and underemployment, Kenya has had to seriously review its educational system in order to promote self-employment. **Table 1** shows that a negligible proportion of the labour force is actively involved in self-employment activities in rural areas compared to urban setting.

Like other school subjects, the home economics programme is designed to meet the national goals of education. Due to the vocational nature of its content, it has been viewed as a subject that could assist in accomplishing the goal of training for economic independence and preparation in life skills. The question is whether or not home economics is achieving that goal.

A close look at the list of businesses commonly operated by individuals or groups of entrepreneurs in Kenya shows that most industries are agriculture-based, thus reflecting the major productive sector in the country (**Republic of Kenya**, Economic Survey, 1986; Statistical Abstract, 1986). Milling and packaging of grains, for example, are widespread activities in the country and especially in the rural areas due to high demand for staple foods. According to **Harper** (1972) and **Gitobu** (1989), slightly over 80 per cent of all businesses owned and operated by indigenous Kenyans are either retail or wholesale trade. A notable observation made in both these studies is that the businesses are fairly small in nature. This is evidence that the situation has not changed much over the period. However, in a study on the rural informal sector in Kenya, **Ng'ethe and Wahome** (1987) established that slightly over two thirds (67.8 per cent) of the entrepreneurs did retail or wholesale trading. In all these studies only

a small percentage of the individuals covered were involved in manufacturing and provision of services. It is important to note that whereas the **Harper** and **Gitobu** studies involved shopkeepers operating in established premises, that of **Ng'ethe and Wahome** concentrated on "*Jua Kali*" operators.

Table 1

Percentage Distribution of Employed Labour Force by Type of Employment, Sex and Location in Kenya

	Rural		Urban	
	Male	Female	Male	Female
Engaged own household farm	80.4	96.1	3.1	27.5
Private wage employment	90.4	1.7	51.7	28.8
Public employment	5.6	0.7	30.7	22.8
Self-employment	4.2	1.2	12.9	18.0
Unpaid family worker	0.3	0.3	1.0	3.4
Employer	0.1	0.0	0.6	0.2

Source: **Central Bureau of Statistics**
Integrated Rural Survey: 1976-1979 Basic Report

The business activities under the trading category include selling of groceries, agricultural produce, animal and farm products, ready-made clothes, shoes and accessories, fabrics, and books and stationery. Services include operating restaurants and other food service activities, processing foods (e.g., milling grains for customers, running health clinics and renting of accommodation facilities in towns or market centres). Manufacturing activities do not seem to have picked up well in the rural areas and therefore the involvement of business people is minimal. Activities identified as manufacturing are those in clothing construction such as dressmaking, tailoring, knitting and production of school uniforms. Dressmaking and tailoring can also be

classified as services in cases where customers pay only for the services rendered in the making of garments.

Other income-generating activities identified as common in the rural areas tend to involve organized groups either under the auspices of KANU *Maendeleo ya Wanawake* or otherwise. The women who are members of these organizations select an activity through which they generate funds as a group. They are able to use some of the profits to invest and the rest to assist individual members to finance specific projects (e.g., roofing the family house with more durable materials, building better houses for families, furnishing the house, bringing piped water to the home, etc.). Most of these kind of activities are initiated and promoted by efforts of women's groups, individual families or persons.

The major activities that generate cash income for individuals and families in rural areas include:

(a) Production and Marketing of Agricultural Produce

The Development Plan of the Republic of Kenya (1989-1993) states that agriculture will continue to play a leading role in feeding the population, generating employment and income. Agriculture and related activities account for over 70 per cent of total employment and the situation is not likely to change drastically. It has been observed that even though there is concentration on agricultural activities, there is evident scarcity of entrepreneurial talent in the rural areas (**Kenya Association of Manufacturers**, 1988).

Due to the high rural population pressure in some areas of the country with an average of 84 persons per square kilometres in 1979 (**Republic of Kenya**, Population Census, 1979), there has been a great demand on the land available for agricultural production. Consequently, this had an effect on the average size of small holdings and has caused some people to turn to other alternatives for income-generating whenever possible. Those with limited land and other resources tend to grow vegetables, fruits and other food crops, the excess of which is sold in the neighborhood markets for cash. Most sellers of agricultural produce are women. Some buy the produce from others and sell to individuals or markets. Kitchen gardens have spread throughout the country and produce such as tomatoes, onions, fruits, bananas, French or green beans and other vegetables prove to be good income for many families in the rural areas.

Some of the constraints experienced in agricultural production and marketing include:

(i) The majority of people involved in this type of activity are women and often this is seen as an extension of their role to provide for and feed the family. Therefore, what is produced has to be shared between the home and provision of a cash income. As a result, there is no assurance that there will always be enough to sustain the market or customer demands.

(ii) Many families and individuals in the rural areas do not have access to adequate land space for growing foodstuffs on a large-scale. Some even go to the extent of using whatever public land is available, especially along the main highways. Population pressure continues to reduce possibilities for greater participation in this area.

(iii) Lack of capital to establish meaningful activities in either production or marketing is a major problem. The use of fertilizer and good quality seed, for example, may not be affordable to many.

(iv) Management skills are often lacking. Proper planning in production or buying commodities with the target market in mind is essential.

(v) Small-scale producers of horticultural produce are often cheated of their rightful income by large-scale dealers.

(vi) Agricultural activities are labour intensive and a lot of time is consumed especially in the production process.

Individuals and families need incentives to increase their involvement in agricultural production and marketing. Better producer prices act as one kind of incentive. There is need to improve the infrastructure to facilitate the movement of agricultural produce from all parts of rural areas. Women and others who sell products at the local markets should be assisted to enable them to sell their produce without harassment for lack of a trading license. The very small-scale producers need security in land resource to maintain production of foodstuffs for both market and household use.

(b) Food Processing and Preservation

Milling of staple grains such as maize, millet, sorghum, etc., is a major activity in rural areas. Milling facilities are provided by individuals or cooperative groups. Many women's groups under the KANU *Maendeleo ya Wanawake* organize themselves to acquire, install and manage mills to serve the specific local community. This is a fairly popular means of income-generation.

Establishing milling facilities is initially quite expensive but pays off in the long run. Usually, there are problems of management and especially in proper record-keeping. Not many individuals or groups tend to venture into food processing and preservation activities.

(c) Production of Dairy Products

Keeping at least one dairy cow for milk supply has become a goal to be achieved by the majority of rural families. With limitation of grazing land,

promotion of zero-grazing has caught up well. The excess milk is sold to individuals in the neighborhood or delivered to local cooperative societies which process into other products or distribute to wider markets. Most of the small-scale producers tend to be limited to selling only milk for cash income. There could be opportunities for diversifying to produce a wider range of dairy products, (e.g., butter, yoghurt, sour milk, etc.). Weather conditions sometimes affect milk production and supply.

(d) Poultry Products

These are popular in most parts of Kenya with both individuals and groups. Organized women's groups tend to go into poultry activities which they operate on a large-scale for a wider market and higher income. Individuals are also encouraged to keep poultry, especially chicken, as they provide eggs and meat for protein requirements in the diet. The excess can be sold for cash income.

(e) Pig-keeping Projects

This is also a popular activity, especially with women's groups whereby the individual members contribute money to start off. After rearing the pigs, they sell them. One of the major problems, however, is the lack of a good market. Also, one has to be extremely careful to dispose of the pigs at the right time, otherwise there could be the risk of going beyond the age and stage required for various purposes. Most pig producers need help in marketing.

(f) Honey Production

Bee-keeping has become quite widespread in most parts of the country. Eastern and Rift Valley Provinces seem to have the most bee-keeping and honey-refining projects. Women's groups on a cooperative basis have ventured into this activity, often with assistance from the relevant government ministries. The groups involved in bee-keeping also refine, pack and market the honey. Although this is a popular product in the local market, there is potential to diversify into outside markets for higher profits.

(g) Handicrafts

Some of the notable projects of this nature include basketry, which produces the popular and widely used *kiondos* (baskets). Such projects are mostly found in Central and Eastern Provinces (**Mugenda**, 1987). The *kiondos* are mostly made of sisal but some individuals have been venturing into the use of knitting yarn to produce a much more attractive and softer product. Many groups under the auspices of KANU *Maendeleo ya Wanawake* have been involved in these crafts. Baskets and other woven objects are made of other suitable materials such as reeds. Very attractive items are made in Western Kenya, Nyanza and Coast Provinces. Handicraft projects involve production of a variety of other objects

which are used for functional as well as decorative purposes. These include wood carving, jewellery making, metal engraving, weaving, embroidery and mat-making. The objects produced through crafts depend largely on the creativity of individuals. Like many other activities aimed at generating income, lack of markets is the major constraint and desperate help is needed, especially to stop or reduce the degree of exploitation by middle-men.

(h) Tailoring/Dressmaking and Knitting

These are extremely popular means for income-generation for both men and women. They require limited equipment (e.g., sewing or knitting machines). Individuals who venture into such activities normally possess relevant skills even though often limited. With constant demand for school uniforms and the general societal trend for fashionable wear, this activity has high potential and needs to be promoted. In a recent study carried out in Meru, **Gitobu** (1989) found out that about 20 per cent of rural women entrepreneurs were in tailoring or knitting businesses. Other researchers have also established that tailoring is a popular income-generating activity in the informal sector (**Harper**, 1972; **Ng'ethe & Wahome**, 1987).

The major problem encountered is to find the initial capital to start the business, and especially the capital needed for the purchase of the necessary machines. Credit facilities are often not accessible to the very small-scale operators. It is not surprising that very few of those in this type of business go into manufacturing. School and other uniform production can be encouraged on a larger scale but capital to start up and sustain the projects is necessary. Relevant counselling and training is often necessary.

(i) General Trading

Research has shown that the major business activity in rural areas is small-scale trading in form of retail trade (**Harper**, 1972; **Child**, 1973; **Ng'ethe & Wahome**, 1987 and **Gitobu**, 1989). Such businesses are either in market centres or villages where the common structure is a *kiosk*. Most of these businesses are financed with funds from the family or individuals and therefore tend to be quite small. Most sell basic commodities. The constraints experienced by this group of people are many and varied:

--- lack of management and entrepreneurial skills which hinder growth of business, especially those operated by women;

--- lack of capital to start up and sustain business activities (usually the problem of accessibility to loan or credit facilities due to lack of adequate collateral);

--- lack of technical skills to enable business people to be fully productive, especially where skills in specific production processes are required;

--- overstocking with slow-moving goods has been a problem for many rural entrepreneurs which causes losses (money held in stock affects cash flow for many traders);

--- extension of credit facilities to customers who do not pay in time to facilitate further stocking;

--- frequent shortages of goods that move faster due to problems of distribution and poor communication;

--- social and financial obligations to families and relatives has had an impact on many small-scale businesses;

--- lack of communication skills has often affected relationships with customers and distributors causing problems in business; and,

--- ignorance of sources of useful information regarding business operation is often a handicap.

Access to capital to start up, expand and sustain small-scale businesses, can contribute to the solution of these problems. Relevant training in management, technical and entrepreneurial skills is also a critical need for many rural business people. Encouragement and assistance in the transition from small-scale to medium-sized industries of manageable size create income and employment in rural areas.

(j) Hairdressing and Cosmetics

This economic activity has been relatively limited in rural areas. However, there seems to be a steady move toward the creation of such opportunities in rural towns and villages. Women, in particular, are venturing into this area of activity.

The study by **Gitobu** (1989) mentioned above showed that about 10 per cent of the women interviewed owned and operated their own hairdressing businesses in their localities. This can be a promising opportunity in the rural area as it relates to personal appearance and improvement.

The major problem cited is lack of appropriate and accessible facilities. Lack of capital for buying basic materials necessary for regular hair care and treatment is another problem. Often the services offered are limited because of a lack of necessary equipment. In addition, there is a lack of electricity in

many of these places. Provision of appropriate premises, capital to start-up and relevant technical and managerial training are critical.

(k) Food Services

Food services (e.g., tea places, restaurants and snack services, etc.) are organized by individuals or groups and operate in an organized form of business which can offer a much-needed service to many workers in urban centres, market centres and construction sites. Even though such services are more common in urban areas, a need seems to be felt in the rural areas as well. Usually snacks consist of local dishes, (e.g., maize and beans "*Githeri*", *chapati*, *mandazi*, boiled fresh maize, sweet potatoes, cassava or porridge). The vendors, however, tend to lack appropriate premises from which to sell their snacks. The standard of cleanliness and hygiene is often questionable. Women and others who venture into this kind of business need assistance to plan and organize their activities more efficiently.

(l) Transportation

There are individuals or groups who venture into public transport, either in bus services or operating "*Matatus*". This is an expensive venture and usually done on a cooperative basis.

(m) Cooperative and Savings Groups

Cooperative and savings groups have been used in various ways to promote income-generating activities for the benefit of their members. Most of the activities already discussed are carried out by organized groups as well. Usually groups venture into alternative ways of investment, thus generating more income.

Other cooperative activities especially popular with women include regular cash contributions, part of which is awarded to individual members in town to finance specific projects in their homes. This way each member has an opportunity to achieve the major goal to help raise the standard of living of her family and at the same time the group saves some money for other projects or investment. This method of income-generation is popular in rural areas where incomes are generally low.

It is therefore evident that in order to promote and sustain income-generating activities in rural parts of the country, problems relating to accessibility to capital, training needs in technical and managerial skills, infrastructure and lack of adequate economic incentives need to be tackled. The general curriculum, and specifically that for home economics should address, at various levels of education, the problem of unemployment and propose possible solutions. The Home Economics Department at Kenyatta University, in conjunction with other relevant bodies, can assist in devising and implementing programmes that can

promote training and business interests. Before discussing the role of home economics in finding possible solutions to the problem, there is a need to look at the role of women in income-generation.

THE ROLE OF WOMEN IN INCOME-GENERATING ACTIVITIES

Most women, especially in rural areas, continue to be engaged in vital income-generating activities. In many developing countries, a large proportion of women entrepreneurs tend to establish businesses that are compatible with household tasks. In a world survey on the Role of Women in Development (**U.N. Survey**, 1986), the two leading types of trades that women in developing countries engage in are: traditional or market trade and modern trade. The report further explains that the traditional trade is concerned with trade in local agricultural surplus and most women in rural areas are engaged in it. The role of women in the small-scale business sector is crucial in Kenya, as in other developing countries. Their contribution to the economy is significant. In order to improve entrepreneurial activities, women need self-confidence and opportunities for greater participation in decision-making in both home and public life.

THE ROLE OF HOME ECONOMICS

Social and economic changes affect the home and family in Kenya as elsewhere in the world. To prepare families to meet these changes, home economics programmes are becoming an integral part of development plans in most countries (**AHEA**, 1981). These programmes are varied; they include teaching of the subject in the schools and colleges, informal education and community development actions. Traditionally, home economics prepared individuals to enter the job market. It did not specifically train for self-employment or home-based occupations (**Weis**, 1983). In Kenya, it has been observed that after individuals develop fundamental home economics knowledge and skills, many are able to establish their own small income generating activities (**Gitobu**, 1989). Some take the risk and are successful, but many do not even try.

There is a need to identify the skills necessary for success in business operations and compile information for the benefit of those who may want to engage in similar ventures. Such information may also be useful in determining the needs of students engaged in vocational home economics at various levels of education. **Weis** (1983) states that:

> *The field of home economics is associated with educational programmes to prepare youth and adults for the occupation of homemaking. However, this field also prepares and serves a number of related occupations within the labour force, and indeed bears an occupational orientation as well as focus to home and family life. Occupational home economics programmes generally have sought to prepare individuals to enter occupations outside the home.*

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Similarly, **Fanslow and Crompton** (1987) indicate that entrepreneurship is a concept that can be incorporated into home economics programmes to cater for specific needs of individuals and families. The need is global in nature and can offer new directions for home economics and related areas.

A study on preparation for entrepreneurship in home economics education, by **Veach** (1987) concludes that although the entrepreneurs found the home economics skills useful in the operation of their businesses, it was the combination of this and relevant entrepreneurial skills that provided them with greater job satisfaction. But the results of the study indicated that graduates of home economics were lacking in entrepreneurial skills.

In relation to the Kenyan situation, **Gitobu** (1989) reported that only one fourth of the rural businesses studied did not admit that home economics had meaningfully contributed to their business operation. About 44 per cent, however, felt that home economics knowledge and skills contributed to their ability to organize and plan activities (see **Table 2**). When the rural women respondents were asked to suggest ways in which home economics in schools could be reorganized to better meet the needs of those who go into their own business, there were varied reactions. About half of the women recommended inclusion of basic business management topics in the content for the curriculum at both primary and secondary school levels. Others suggested including the acquisition of more practical skills in home economics subject matter (35 per cent) such as advanced skills in tailoring and dressmaking and creating awareness to business opportunities through use of home economics skills. The general deficiency in the teaching of entrepreneurial competencies in home economics programmes has been pointed out by other researchers (**Fanslow & Crompton**, 1987; **Weis**, 1983; **Goetting & Muggli**, 1988) who have also emphasized the need to incorporate the training of relevant business skills in the home economics education programmes. Elsewhere, in a major study on women in development in seven African and South American countries (**Mickelwait et al.**, 1976), it was found that the most common vocational training available to rural women focussed on home economics skills.

Home economics can offer a wide scope of possibilities in income-generating activities which can be promoted in rural areas. These include production and marketing of such things as: baked goods, fried foods, snacks, preserved foods, general home and child care services, dressmaking and tailoring, home furnishing, etc. The ways in which creative ideas can be turned into concrete practical solutions can be many and such creativity should be encouraged at all levels of education. Acquiring relevant business skills complements this type of learning.

Table 2

Ways in which Home Economics Knowledge and Skills Applied in the Operation of Businesses by Rural Women Entrepreneurs

Ways of Application	number	%
Organization and planning	23	44.2
Raising family and managing the home	14	26.9
Making articles for customers	14	26.9
Much assistance to business	13	25.0
Maintain standards of cleanliness	10	19.2
Little assistance to business	8	15.4
Decision-making and independence	7	13.5
Keeping basic records	3	5.8
Use of patterns and recipes	2	3.8

Source: **Gitobu, J.K.** (1989): Skills needed by Women Entrepreneurs

FINAL REMARKS

The process of development in any country depends on the active participation of individuals, families and communities. As more people choose to get engaged in viable income-generating activities, they need encouragement, and moral and financial support. There is also a need for intensive training in business and management. All areas of home economics can incorporate business-related aspects to make the curriculum more relevant for the present and future needs of individuals in this area. Income-generating activities can help to increase productivity in economic development. Above all, it is important that the dignity of self-employment is actively promoted, especially among the youth of this country.

Recommendations for Home Economics Curriculum Development

1. Home economics curriculum content has the potential to provide skills and abilities necessary for business activities in manufacturing and service industries. With adequate preparation, graduates of home economics at Kenyatta University can assist those in their communities in the rural areas to acquire skills for small-scale businesses. This can be achieved through the process of transmitting knowledge and skills to students who in turn get involved in community projects to assist individuals and families.

   Teachers of home economics in the rural areas can also be involved directly with the families and individuals in the community. This involvement can take place through the families of students or organized groups such as KANU *Maendeleo ya Wanawake*, cooperative groups, parents-teachers associations, professional bodies, religious organizations, etc. To be a change agent, one has to be personally and actively involved in the community where change is desired.

2. In order for the teachers and students of home economics to effectively assist individuals and families in their communities to identify, establish and sustain relevant income-generating activities, they require additional preparation and training. For this, there is need to reorganize the home economics curriculum to include the entrepreneurial aspects that would be beneficial in a business situation. This would be consistent with what is outlined in the **Development Plan of the Republic of Kenya** (1989-1993) in relation to education and development. It is stressed that the training programmes, especially those designed for small-scale enterprise in both urban and rural areas, are of critical importance to the expansion of self-employment opportunities. It has also been noted that the 8-4-4 system of education is intended to prepare students at various levels for self-reliance within the context of economic and social development.

3. Programmes for the development of managerial skills and capabilities through increased training are needed. It has been established in a few studies in Kenya that limitations in basic managerial skills represent an important problem. This is generally associated with difficulties in keeping and maintaining business records and in maintaining cash flow and capital to sustain business operations. These conclusions are consistent with those made elsewhere by **Hisrich and Brush** (1986).

4. In order to plan for appropriate changes to be effected in the existing curriculum, there is need for further study on the kinds of business activities and personal characteristics that are helpful in establishing and sustaining businesses. Some of the suggestions offered by rural entrepreneurs regarding ways of improving the home economics curriculum

so that it is more relevant for self-employment include: (a) incorporate business skills at all levels of education; (b) teach more practical and advanced skills in dressmaking and tailoring; (c) create business opportunity awareness in students; (d) familiarize students with ways of securing capital for income-generation; and, (e) incorporate entrepreneurial aspects into the curriculum (**Gitobu**, 1989).

Efforts to promote economically viable opportunities in urban or rural areas cannot be achieved without the cooperation and assistance of policy-makers, educators, trainers and relevant organizations. Any change initiated and incorporated in the curriculum must be relevant not only to the students/participants but also the specific community. Home economics has a global responsibility to respond to the needs of individuals and families by finding practical solutions to problems of securing income and employment.

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A SYSTEMS APPROACH TO FAMILY RESOURCE MANAGEMENT AND ALLOCATION: IMPLICATIONS FOR HOME ECONOMICS AND RURAL DEVELOPMENT

by

Olive M. Mugenda Ph.D.[1]

INTRODUCTION

Resource allocation and management can be discussed at different levels. This paper focusses exclusively on household-level resource management and allocation. However, external factors that influence management and allocation of resources at the household level are also discussed. It is for this inter-relationship between the family system and other systems in the environment that an ecosystem approach to resource management is emphasized. The paper identifies different household resources; discusses the nature and components of family resource management systems; examines the relevance of an ecosystem approach to management; identifies principles that determine choice, allocation and use of resources for specific purposes; examines circumstances affecting family resource management; and, discusses implications for home economists and rural development.

What are Resources?

Resources refer to facilities, tools or talents which households use to satisfy their needs. Resources can be broadly classified into human and non-human resources. *Human resources* are all the means that are vested in people to meet demands. Human resources include technical skills, for example the ability to use one's hands and body to perform specific tasks like farming, carpentry, and cooking. Human resources also include skills to express oneself or the capacity to interact with others in the family or group situation. Capabilities and attributes such as health, energy, time, knowledge, attitudes and interests are all examples of human resources. *Non-human resources*, on the other hand, are concrete, tangible means of achieving individual and household goals. **Engberg** (1988) further classified non-human resources into material and environmental resources. Material resources include: land, money, financial assets, livestock and agricultural assets, space and facilities, means of communication and means of transportation. Environmental resources can further be classified into resources in the physical environment and resources in the social environment. Resources in the *physical environment* include natural materials that are tangible like water, soil, forests, plants, animals and natural materials like air, wind, light, etc. Other resources also include those which are human-made, e.g., market places, schools, clinics and recreation places. Examples of resources in the *social environment* include fields, community groups and economic institutions like shops, banks and markets.

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[1]Senior Lecturer, Department of Home Economics, Kenyatta University, Nairobi, Kenya.

Resource management

Management of resources requires thoughtful consideration. The activities of management must be carried out in a systematic order if needs, desires and goals are to be satisfied. It is this need of systematic management that has made the systems approach very applicable to family resource management.

PRINCIPLES IN THE USE OF RESOURCES

In order to choose a resource and assess its usefulness for a particular purpose, a number of principles need to be understood. According to **Engberg** (1988) the major principles are:

Scarcity: Resources are limited. Because of scarcity of resources, it is assumed that at any given time, the amount of resources which individuals or households have will be inadequate for satisfaction of needs and desires.

Utility: Utility refers to the usefulness of a certain resource. Utility of a resource depends on the person's preferences, knowledge and judgement of the resource.

Accessibility: Resources must be available to the person who is in need at the right time and place.

Exchange: Money is the most common and easiest medium of exchange. Households and individuals need to be able to exchange resources so that they can dispose of the abundant resources and acquire the limited ones in trying to satisfy a given goal.

Transferability: Not all resources can be transferred from one person to another. Most transfers are usually grants or one-way transfers, although reciprocity may occur over time.

Substitution: This is a form of exchange, where one resource is exchanged for another in a non-market situation.

Versatility of resources: Most resources have more than one use. For example, money can be used in many ways. Households and individuals can capitalize on versatility of available resources.

Creation of resources: This principle refers to a situation where one set of resources can be used to create other resources. For example, material

resources can be created by using time and human resources like knowledge and skills.

Accumulation of resources: Resources may be accumulated for future use. Saving or investing allows a resource to be used for future needs, at a later time.

Sharing of resources: This is important especially if households can form a network.

The Family Resource Management System

The Family Resource Management System proposed by **Deacon and Firebaugh** (1988) includes a conceptual model of resource management based on a systems approach. It is referred to as a conceptual model because for it to be called a theoretical model, the model needs to be further tested under different situations.

A *system* is an integrated set of parts that function to accomplish a set of goals. Given this definition, a family is a good example of a system. A *subsystem* is a system within the main system. A subsystem, just like a system, comprises a set of components functioning together to satisfy a goal.

The management process can be seen as a system since various activities are carried out to accomplish a goal. Through the managerial system, individuals and families strive to accomplish their goals by acquiring and using resources. The components of the systems approach are inputs, throughputs and outputs. *Inputs* refer to energy or any information entering the system in order to bring about transformation. *Throughputs* refer to the transformation processes of inputs to outputs. *Outputs* refers to the desired outcomes.

Inputs

Resources like education, income and knowledge are examples of inputs. Other inputs as explained by **Deacon and Firebaugh** (1988) are *demands* and *events*. They are inputs because they trigger action in the system in order to achieve the required goals. Demands may originate from within or outside the family system. An example of demand from within the family system is the biological needs of family members, such as food and water. Examples of demands outside the family system are those from a political system such as school attendance and obedience to laws. Events are other inputs that trigger the system to act in a home situation, (e.g., an accident at home is an event that calls for action). External to the house, an example of an event that requires action is a heavy downpour which might call for action in the managerial system.

Throughputs

Within the managerial system, throughputs refers to the transformation process of inputs in order to achieve the desired goals. In other words, something must be

done to the inputs in order to meet the goals even if they may have the same output because of their differing ability in carrying out transformation processes. For the management of personal and family affairs, the major components of throughput are planning and implementing.

Planning

Planning is a series of decisions about the sequence of action taken in order to achieve goals. A plan determines failure or success in goal achievement. One major step in planning is to assess available resources in relation to the set goals. Assessing resources begins with the recognition of available resources and if need be, consideration of ways of increasing resources. Assessment involves both human and non-human resources. For example, it may be realized that money needed to accomplish a certain goal is not enough and ways to get extra income needs to be discussed. Likewise, assessing human resources like knowledge and skills of family members is important in planning so that such resources can be fully utilized.

Another component of planning that should be highlighted is action sequencing. Action sequencing is the ordering of parts of an activity or specifying succession among activities. For a system to work effectively, activities must follow a certain order. Sequencing activities can be done so that: one task is completely done if the succeeding one is to be successfully completed; two or more activities are done together until they are completed; or two or more activities are done concurrently or in an overlapping manner (dove-tailing).

Attributes of a Good Plan

In order for plans to be implemented successfully, the plan must be clear to those who will implement it. The plan should contain appropriate details and should be flexible to allow for changes. It should be realistic in terms of resources required. Reality refers to the feasibility of accomplishing the plan. Plans differ depending on the type of family system in question. For *morphostatic* family systems, which means closed family systems, plans are rigid and inflexible. Such family systems want to maintain a status quo. One factor that makes many family systems appear morphostatic is the lack of alternatives due to limited resources. For *morphogenic* systems, or open systems, plans are flexible. Even though there is a specified sequence of activities, such a sequence can be changed depending on the situation. Plans in *random systems* are very spontaneous.

Implementation

Implementation refers to putting into action what has been planned. It is important to control and check the activities to ensure that the plan is being implemented as foreseen. Apart from controlling and checking, adjusting the plan during implementation is also important. In many cases, plans need some adjustment to accommodate changes that might have occurred since planning.

Factors that Affect Implementation

There are various factors that affect implementation of plans: (1) individual characteristics affect implementation of plans (such characteristics include tolerance, patience, intelligence, flexibility and ability to control situations); (2) the family type also affects implementation (closed family systems will want to implement plans without changing at all, whereas open family systems are flexible and allow for changes during the implementation stage); (3) physical setting, for example, weather, might also affect implementation of plans; (4) the type of task or plan to be implemented will also affect the implementing activities. For example, a complicated task or plan may need more controlling and checking.

FACILITATING ACTIONS

In the family resource management system, there are facilitating actions which usually take place in all stages.

Communication

Communication is an important managerial tool used for enhancing prospects of meeting goals of the system. Exchanging well-understood messages is important for sharpening goals, planning and implementing the plans. Communication is also important for discussing satisfaction or dissatisfaction with the outcomes. Communication styles differ depending on the type of system. In closed systems, communication is very structured, usually just to give instructions. In open family systems, communication is spontaneous and open. The communication style is not predictable since the system is very flexible.

Decision-making

Decision-making is a basic process which underlies all functions of family resource management. At every stage of management decisions must be made. The decision-making process involves: recognizing the need for a decision and identifying and weighing appropriate alternatives. Search for relevant information is necessary and an attempt should be made to predict any possible eventuality resulting from decisions taken; and, choosing the best alternative.

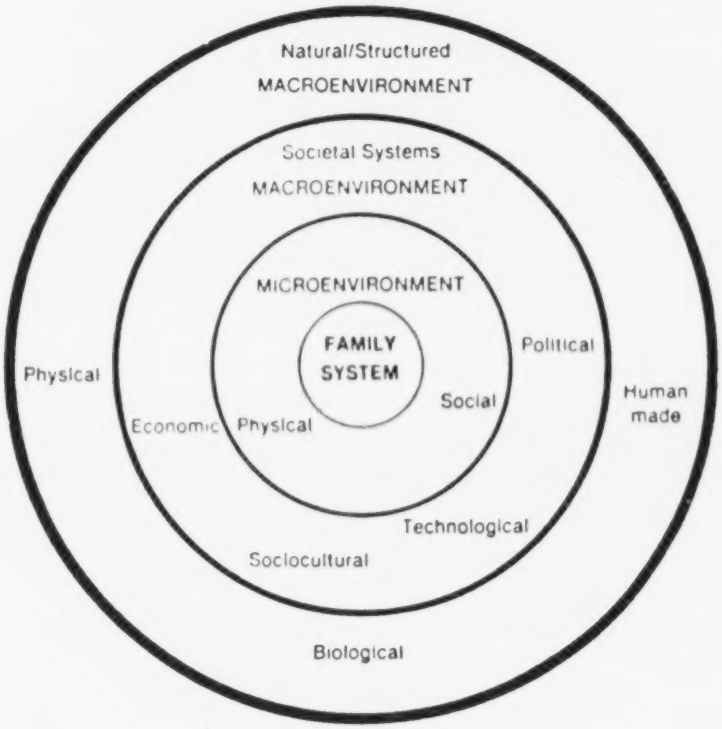
Ecosystem Approach to Family Resource Management

It is important to show the relationship of various systems that affect the managerial systems. Ecosystems or ecological systems are all the environments that interact interdependently. The family system within which the managerial system falls depends on various external systems. These external systems all operate outside the

family systems. Such systems include businesses, government institutions, churches, schools and universities. Some of the systems are in the micro-environment while others are in the macro-environment.

Figure 1

MICRO- AND MACRO-ENVIRONMENT OF THE FAMILY SYSTEM



As can be seen in **Figure 1**, the micro-environment provides the immediate setting for the family system, that is, the physical and social surroundings of the family or household. The macro-environment includes the societal systems and the natural and structured systems. Information, goods and services are exchanged within these social systems. An important assumption when dealing with ecosystems is the interdependency among systems. Examples of social systems that affect the family system are:

- **Political Systems**: This system affects the family system through laws, regulations, protection and other services. The policies and regulations of the political system have almost immediate impact on the family systems (e.g., on matters relating to education).

- **Technological Systems**: This system also affects the family system. Changing technology has both personal and social welfare implications and increases the significance of management.

Examples of natural and structured systems are structures such as buildings, highways, natural space such as parks and deserts and the accompanying biological systems.

IMPLICATIONS FOR HOME ECONOMISTS AND RURAL DEVELOPMENT

Implications for Curriculum Development

1. Home management is a subject which has been taught in our schools for a long time. The existing programmes emphasize content areas such as methods of cleaning, laundry work and household budgets. The inter-relationship between the family system and other systems that affect the family system was seldom emphasized. There is need to put more emphasis on the area of family resource management because families not only manage the home but they are also called upon to manage or have a say in the management of resources outside the family system with the aim of improving the quality of life (**Engberg**, 1988).

2. Emphasis should be put on the ecosystem approach to resource management. This recommendation is based on the knowledge that the family system cannot function in isolation. The ecosystem approach to management will require a change in content and approach to management.

Implications for Home Economics Community Extension Work

1. The extension workers in home economics and other disciplines should introduce the ecosystem approach of family resource management to rural families. Rural communities are highly dependent on other systems, for example, the systems from the natural and physical environments. Rural households should therefore be made to understand the interdependence of these systems.

2. Extension workers should also explain in very simple language how to take care of various resources, for example, a resource like land, which is very important. Extension workers should explain how to prepare land

for cultivation, planting at the right time and the proper variety of crops to use.

3. Another resource where extension workers can advise households is food. Food utilization and storage to meet nutritional requirements should be explained to rural households.

4. Home economist extension workers should strive to promote the health status of all households. Good health is a most important human resource. The way resources are managed and allocated may or may not promote good health.

5. Extension workers should also try to promote income-generating activities in order to increase resources, especially of food and income.

6. Other areas that home economics teachers and extension workers should share is the importance of limiting family size. The adequacy of resources for families, particularly income and farming land largely depends on family size. Since it is not always possible to increase income as family size increases, family happiness and satisfaction is affected by the increase in family size if not accompanied by adequate income.

7. The system approach to family resource management should be taught as simply as possible to all families. There is need to emphasize that the acquisition of resources alone is not enough. The way the resources are managed makes all the difference, hence the importance of putting emphasis on all the components of the systems approach to management. Families should also be made aware of all the resources available, especially the human resources. The principles of resource management should be stressed.

Implications for Rural Development

1. Rural development has been defined by the World Bank as "a strategy designed to improve the economic and social life of a specific group of people - that is, the rural poor. In *Training for Integrated Rural Development*, **Mullen** (1986) proposes an integrated rural development system. The proposed system has several subsystems, namely:

    * *Agricultural Production Subsystem*
    * *Rural Industries Subsystem*
    * *Social Subsystem*
    * *Physical Infrastructural Subsystem*
    * *Management Subsystem*

For rural development to be complete, all these subsystems must develop. It is the role of home economists and also the role of other relevant disciplines to help initiate training programmes for rural development keeping in mind the above subsystems of the overall rural development system.

2. Resource management, as said earlier, does not refer only to the home. Resource management principles also apply to small businesses and other income-generating activities. Therefore, home economists, teachers and extension workers should also impart knowledge of resource management and allocation to women or families who are trying to increase their resources by engaging in small-scale businesses.

3. Needs assessment research should be done by home economists and other related disciplines, in order to plan relevant programmes for rural development.

4. Home economists and other specialized professionals plus the representatives of beneficiaries should participate in programme planning and implementation of programmes even at the government level. This could result in considerable savings in project costs as well as in increased benefits.

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HOME IMPROVEMENT

by
Maria Thiele-Wittig, PhD[1]

INTRODUCTION

Home improvement is concerned with the betterment of basic living conditions. Issues relevant to home improvement are discussed in this paper with specific reference to curriculum planning.

Engberg (1988) describes the household in its particular environmental context and its members are understood as having a very active role in shaping the future of the home through decisions on resource use and resource production. This approach emphasizes: (a) an ecosystem orientation in home economics as opposed to separate subject-matter, focusing on the respective local environment with its relationships to the household; (b) an emphasis on the role of the household in the informal sector managing both production and consumption processes, thereby contributing not only to family well-being, but also to development and welfare; (c) a process orientation as opposed to more static approaches; (d) processes of discovery and problem identification, decision-making and management for evaluating situations and finding better ways by respective resource allocation; (e) participation as opposed to prescriptive procedures.

Home economics deals with people's everyday needs. These needs are on several levels, described by **Engberg** as: "(i) **existence needs**: includes needs for material and physiological resources to satisfy hunger, thirst, needs for shelter, tools and technology, protection, comfort, sexual gratification, procreation, cash income, and satisfactory working conditions; (ii) **relatedness needs**: needs satisfied through interaction with other persons, with household and family members, neighbours, co-workers, friends, others on whom one depends for mutual sharing and concern; and (iii) **growth needs**: needs which allow each person to move towards higher levels of functioning, creativity and productivity throughout life. Growth needs include needs for participation, learning, leisure and recreation." Home improvement touches these inter-related needs (see **Figure 1**).

Needs, as described above, vary with different types of households and families, in particular with respect to their composition and structure; they also vary with different cultural and social settings.

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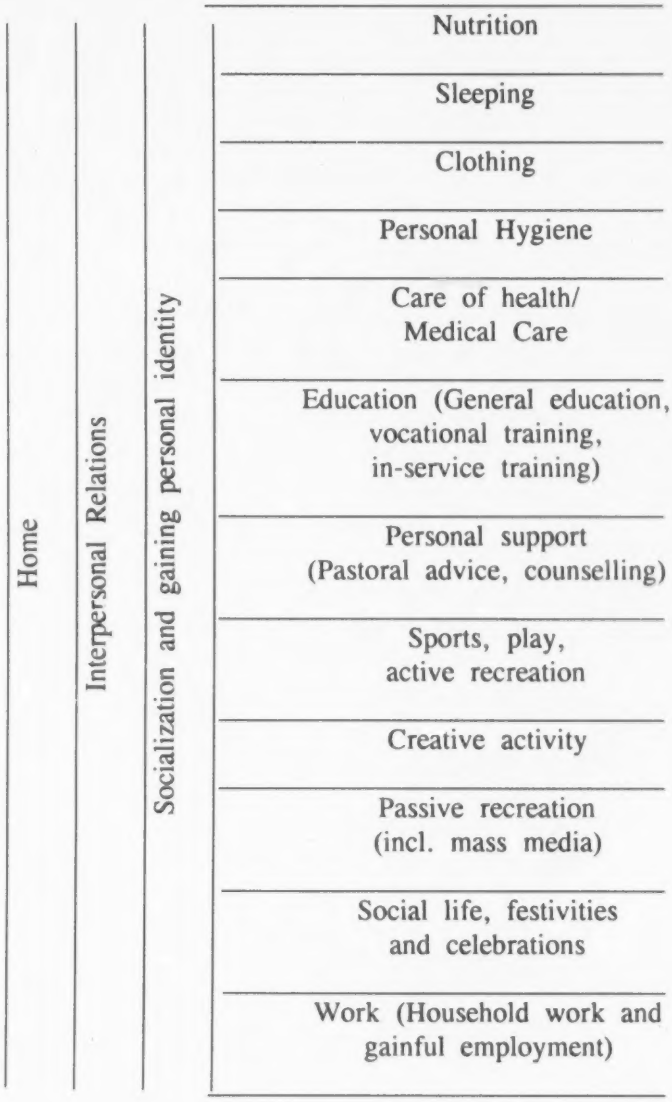
[1]Department of Home Economics, University of Duisburg, Federal Republic of Germany.

Figure 1

SET OF NEEDS ACCORDING TO BLOSSER-REISEN



Translated from: **Blosser-Reisen, L.** (ed.) *Grundlagen der Haushaltsführung*, Baltmannsweiler. 1975. p.109.

THE HOME AND ITS ENVIRONMENT

There is a permanent exchange between households and their environment. The ecosystem approach in home economics considers all aspects of this interrelationship. Different levels of environmental factors which influence the housing situation can be identified. Generally, at the home level, there is an internal more private area whose access is clearly relegated to certain family members. There is a semi-public area around the dwelling for communication and common activities, followed by the larger zone of the near environment, where public services may contribute greatly to meeting everyday needs.

In poor communities, provisions for daily life are not easily secured on the homestead compound. Obtaining basic necessities such as water and fuel may necessitate unproportionally high efforts of family members, particularly women (e.g., fetching water and firewood).

Since women are often responsible for the provision of water, waste disposal, sanitation and hygiene, their workload increases substantially if the respective infrastructure is inadequate. Therefore, discussion of shelter needs to include infrastructure and community amenities.

For households, and particularly women, it is important to have access to information and resources relevant to different aspects of home improvement. Access to information may be more difficult to obtain for women who are illiterate. These ideas may be illustrated and extended by the ecological model, shown in **Figure 2**.

COMMUNITIES AND HOMES: UNDERSTANDING THE CONTEXT

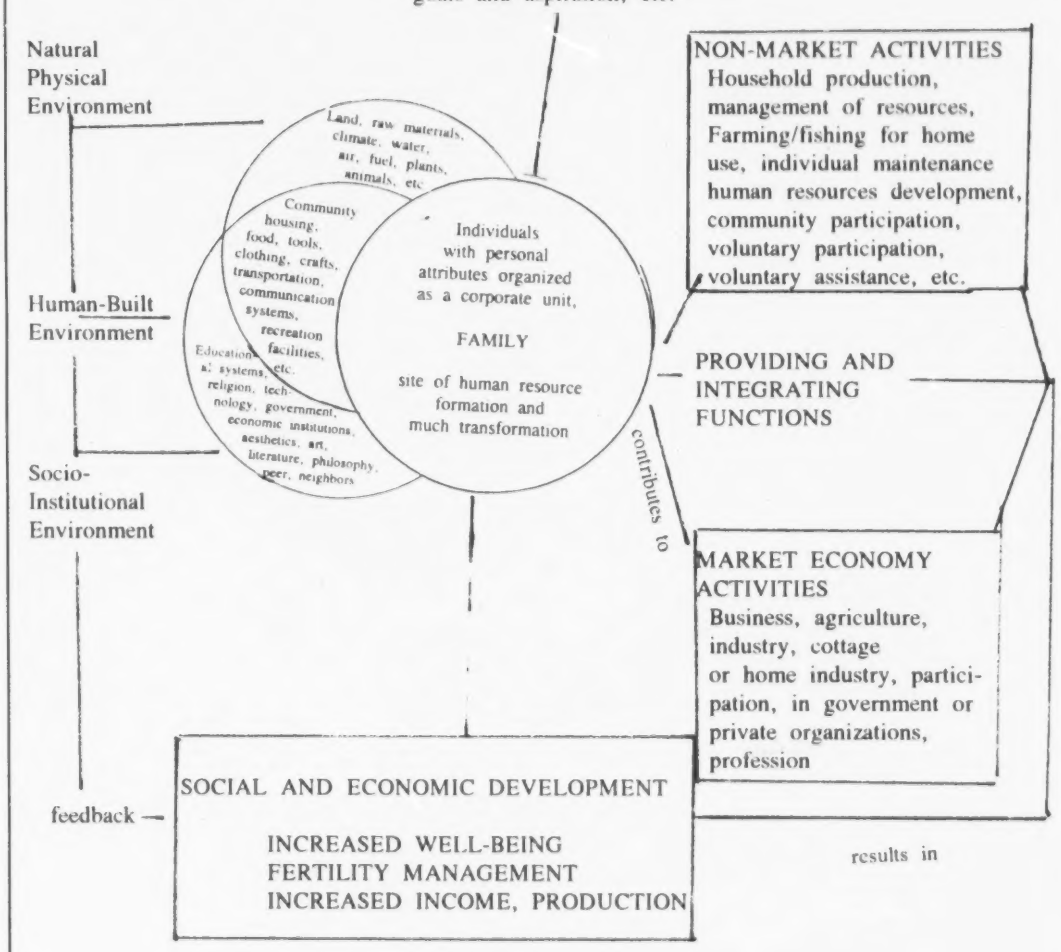
The identification and assessment of the major problems and the priority needs within a community is the first step in the development of a community initiative toward home improvement. Through a participatory approach, household needs can be identified and assessed. Through investigatory research, family members can clarify their housing needs and values and identify possible solutions to their problems. In order to understand the basic socio-economic situation of a particular community, and conditions in homes, information will need to be collected at the community and household levels, such as:

Community level:

- *How large is the community (population size, geographical area covered)?*
- *How many families live in the particular community?*
- *What is the average family size?*
- *Is there a primary school, a pre-school in the community?*
- *What is the school enrolment by grade (for boys and girls)?*

Figure 2

FAMILY INTERACTION WITH THREE ENVIRONMENTS ECOLOGICAL MODEL FOR VIEWING ROLE OF FAMILY IN SOCIAL AND ECONOMIC DEVELOPMENT


PERSONAL
ATTRIBUTES OF MEMBERS:
Temperament, skills, personality
physical health and vigor, etc.
STRUCTURAL ATTRIBUTES OF FAMILY:
Sex, age, residential composition;
authority patterns, division of labor
and roles, decision-making patterns,
interpersonal communication channels;
effectual relationships;
goals and aspiration, etc.
Natural Physical Environment
Human-Built Environment
Socio-Institutional Environment
Land, raw materials, climate, water, air, fuel, plants, animals, etc.
Community housing, food, tools, clothing, crafts, transportation, communication systems, recreation facilities, etc.
Education, systems, religion, technology, government, economic institutions, aesthetics, art, literature, philosophy, peer, neighbors
Individuals with personal attributes organized as a corporate unit,
FAMILY
site of human resource formation and much transformation
NON-MARKET ACTIVITIES
Household production, management of resources, Farming/fishing for home use, individual maintenance human resources development, community participation, voluntary participation, voluntary assistance, etc.
PROVIDING AND INTEGRATING FUNCTIONS
contributes to
MARKET ECONOMY ACTIVITIES
Business, agriculture, industry, cottage or home industry, participation, in government or private organizations, profession
SOCIAL AND ECONOMIC DEVELOPMENT
INCREASED WELL-BEING
FERTILITY MANAGEMENT
INCREASED INCOME, PRODUCTION
feedback
results in

- *How many teachers are there (number of trained and number of untrained teachers)?*
- *Describe the physical condition of the school (size of classrooms for number of pupils, lighting and ventilation, sanitary facilities, safety of school grounds).*
- *What kinds of health facilities are available in the community? Describe the kinds of health services available.*
- *How many health care workers are there?*
- *What are the community water sources? What is the quality of the water supply?*
- *What crops and livestock are grown? Are they sold or raised for home use? What part do the women play in agriculture, etc.*

Household level:

- *Describe the construction of the home. (Describe the inside and outside of the home).*
- *How many people are in the family (by gender)?*
- *How many people live in the home (by gender)?*
- *How does the family obtain its water?*
- *Where are the cooking facilities?*
- *What kind of fuel is used?*
- *Are there toilet facilities, what kind and in what condition?*
- *Does the family own poultry or animals (what kind, how many)?*
- *What foods are grown for home use? for sale?*
- *What is the family's staple diet?*
- *How many meals do family members eat on an average day?*
- *Are there "hungry seasons" or periods in which food is scarce and inadequate?*
- *What are the observable health/nutrition conditions among different family members, etc.?*

(a) A place for protection, rest and sleep

Does the home allow for the rhythms of rest and work of the different family members? Is it relatively safe (e.g., are there risks of injuries, pollution from smoke)? Does it have adequate accommodations for sleeping, clothing storage, facilities for personal hygiene and sanitation? Places such as the cooking area, the washing area, spaces and materials for processing, storing and marketing may need careful assessment. Attention should be paid, in particular, to the design of working spaces and surfaces, materials, water drainage, waste disposal home maintenance, lighting, ventilation, toilet facilities.

(b) A place to live and work

While the home represents both a workplace and a place for rest and recreation, the proportion of these two functions is generally very different with respect to socio-economic status, gender and age group. For women, the workplace aspect of the home is typically dominant. For men who work or spend much time outside the home, the recreational function may be more prominent. For children, the importance of either function depends on how much they have to contribute to the family's subsistence, where they have their places for play. Socio-cultural traditions play a role with regard to the values of the home as a place to live and communicate.

(c) Family resources available for home improvement

Do families have the resources necessary for home improvement? Other resource factors that can be investigated are community services, access to viable credit conditions, access to specific programmes for home improvement or low-cost housing to enable women to build or to improve their homes.

FINAL REMARKS

Family needs change with changes in household size, the age of its members and the household composition. For example, the needs of a household with small children may differ from a household with older children. Changes in the larger environment and socio-economic conditions may also lead to changing needs. Therefore, home improvement programmes need to be flexible to adapt to these dynamic and changing situations.

Home improvement is seen in a broad context with a view to curriculum planning and, in this regard, the following points are suggested for curriculum consideration:

- *the ecosystem approach relating household activities and processes to the different dimensions and aspects of their environment;*
- *households and families; and their ability to meet basic needs;*
- *the surrounding environment and community amenities;*
- *material aspects of the home and their impact on family health and well-being - construction, ventilation, lighting, size, space, furnishings, cooking facilities and energy supply, water, sanitation, waste disposal, resources available for home improvement (family dynamics).*

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CONCLUDING REMARKS

The thirteen discussion papers contained in this document served as a basis for the seminar working group deliberations. Three working groups were formed: a *working group on nutrition*, a *working group on early child care and education*, and a *working group on rural development*. Each focussed on curriculum and training needs and the three group reports appear in **Annex III**.

The *nutrition working group* considered issues relating to strengthening the nutrition component in the present training curriculum and the development of the new Bachelor of Science (B.Sc.) in Foods and Nutrition Programme. The group believed that nutrition teaching should be responsive to the food and nutrition situation in rural and disadvantaged communities and emphasized skills training through community field work. The working group report offers suggestions for course themes e.g., food production, preparation, processing and storage; food security; income-generation, etc. With regard to the B.Sc. Foods and Nutrition Programme, areas for consideration included such topics as small-scale food production and food security; food and nutrition policies and programmes, qualitative and quantitative research, etc.

A CHILD CARE CENTRE has been established at the Department of Home Economics through UNESCO support. This CENTRE is designed to serve as base from which early childhood care and education activities can be organized. Training activities emanating from this CENTRE can be linked to rural development and actual student field work. With regard to the planned Child and Family Studies degree programme, the *early childhood care and education working group* provided useful suggestions on possible goals and objectives and course development. The need to collaborate closely with the Kenya Institute of Education (K.I.E.) was underscored. Possibilities for diversifying the use of the CENTRE were also explored.

The third *working group on rural development* discussed linkages between home economics and rural development and potential for enhancing the rural development dimension of the overall home economics training programme. This group reviewed the content of existing courses and made suggestions for other courses are as such as those covering appropriate

technology, rural housing environment, income-generation and management skills, community development, socio-economic changes and the family, sociology of rural areas and their people, etc. It was also felt that research and analytical skills are important. Here, community-based research undertaken jointly by students and faculty is believed to be of high priority.

Each of the working groups encourage that due consideration be given to the practical dimension of training. Exposing students to the realities of communities was considered critical to the process of understanding contemporary social, economic and cultural issues of development. Instructional tools such as participatory and problem-solving methods are extremely useful in this regard. Flexible course time-tabling can allow for blocks of time required for field work and community involvement activities. Exchange and collaboration between Departments and Faculties offer much scope for enhancing the quality of instruction.

Professor Oniang'o in her closing remarks underscored the wealth of ideas exchanged among participants. She welcomed suggestions for training development and fully supported the need to focus attention on the situation of Kenyan families and communities in the present social and economic context.

Mr. R.D. Wambugu, Deputy Chief Inspector of Schools, Ministry of Education, officially closed the seminar. He emphasized the vital role that education has played in national development and was pleased to note the important suggestions which emerged from the deliberations. He especially supported the attention given to teaching methodologies, skills acquisition through field work and the desirability of government-university-community links.

ANNEXES

ANNEX I

UNESCO/KENYATTA UNIVERSITY SEMINAR

"CURRICULUM REORIENTATION IN RURAL DEVELOPMENT: IMPLICATION FOR HOME ECONOMICS"

UNESCO ROSTA NAIROBI, KENYA
19-23 FEBRUARY 1990

List of Participants

Professor H. Ayot
Dean
Faculty of Education
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Ms. F. Bahri-Benabbou
Social Affairs Officer
Organization of African Unity (OAU)
P.O. Box 3243
Addis Ababa, Ethiopia

Dr. S. Bali
Chairperson
Department of Educational Psychology
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Ms. A. Burgess
Nutrition Education Consultant
Craiglea Cottage
Glenislea
Blairgowrie PH11 8PS
Scotland, U.K.

Dr. F. Dovlo
Nutrition and Food Utilization
Consultant
P.O. Box 6278
Accra, Ghana

Dr. H. El Saady
Health and Nutrition Consultant
c/o National Committee for
Motherhood and Childhood
P.O. Box 11
Misr el Kadeima
Cairo, Egypt

Dr. Y. Eraj
E.R.C.O.G.
Jubilee Insurance House
Wabera Street
P.O. Box 43789
Nairobi, Kenya

Ms. J. Fritsch
International Federation of
Home Economics (IFHE)
32, rue Georges Vogt
92310 Sèvres, France

Mr. O.N.N. Gakuru
Department of Sociology
University of Nairobi
P.O. Box 30197
Nairobi, Kenya

Ms. M. Ahmed Ismail El Nadeef
Lunds University
School of Dentistry
Carl Gustavus väg 34
21421 Malmö, Sweden

Ms. D. Kababu
Home Economics Inspectorate
Inspectorate Headquarters
P.O. Box 30426
Nairobi, Kenya

Ms. M. Kabiru
Coordinator NACECE
Kenya Institute of Education
P.O. Box 30231
Nairobi, Kenya

Dr. R. Kapiyo
Appropriate Technology Center
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Ms. C. Kiara
Natural Science Programme
Assistant to the Secretary-General,
Kenya National Commission for
UNESCO
Ministry of Education
Moi Avenue
P.O. Box 72107
Nairobi, Kenya

Ms. N. Kielmann
Applied Nutrition Unit
University of Nairobi
P.O. Box 41607
Nairobi, Kenya

Ms. H. Kigutha
Chairperson
Home Economics Department
Egerton University
P.O. Box 536
Njoro, Kenya

Professor D. Kiminyo
Department of Educational Psychology
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Ms. J. Kimiywe
Home Economics Department
Egerton University
P.O. Box 536
Njoro, Kenya

Mr. M. Kinunda
UNICEF Regional Office
UNESCO Education Adviser
P.O. Box 30592
Nairobi, Kenya

Dr. C. Kithinji
Department of Educational
Communication and Technology
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Dr. B. Koech
Department of Educational Psychology
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Dr. J. Lutz
Consultant
Education and Development
P.O. Box 867
Jos, Plateau State, Nigeria

Dr. P. Lutz
Technical Adviser
UNDP/WB Project NR/87/011
P.O. Box 867
Jos, Plateau State, Nigeria

Ms. G. Maina
Senior Agricultural Officer
(Home Economics)
Head, Rural Youth Branch
Ministry of Agriculture
P.O. Box 30028
Nairobi, Kenya

Ms. R. Masya
Social Science Programme
Assistant to the Secretary-General,
Kenya National Commission for
UNESCO
Ministry of Education
Moi Avenue
P.O. Box 72107
Nairobi, Kenya

Professor J. Meme
Professor of Paediatrics
and Child Health
University of Nairobi
Faculty of Medicine
Kenyatta National Hospital
P.O. Box 30588
Nairobi, Kenya

Ms. J. Meme
Head of the Nutrition Unit
Division of Family Health
Ministry of Health
P.O. Box 43319
Nairobi, Kenya

Ms. H. Missano
Principal Nutrition Training Officer
Nutrition Education Training Dept.
Tanzania Food and Nutrition Center
P.O. Box 977
Dar-es-Salaam, Tanzania

Dr. K. Mwiria
Bureau of Educational Research
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Dr. R. Mwonya
Department of Home Economics
Egerton University
P.O. Box 536
Njoro, Kenya

Ms. R. Nguchu
Senior Curriculum Developer
(Home Economics)
Kenya Institute of Education
P.O. Box 30231
Nairobi, Kenya

Ms. P. Ochola
African Medical and Research
Foundation
P.O. Box 30125
Nairobi, Kenya

Dr. J. Ojiambo
Director of Women and Youth Affairs
Kanu Maendeleo ya
Wanawake Organization
P.O. Box 4412
Nairobi, Kenya

Ms. I. Opdoel
Sandaker Videregaende Skole
Hans Nielsen Hauges Gate 1
Postboks 4283 Torshov
0401 Oslo 4, Norway

Ms. S. Othieno
Provincial Inspector of
Home Economics
Provincial Education Office
Nyayo House
P.O. Box 74629
Nairobi, Kenya

Ms. L. Rubinstein
Department of Pre-school Education
Malmö School of Education
P.O. Box 23501
200 45 Malmö, Sweden

Ms. M. Sachs
UNESCO
Preventive and Health Education
Division of Education for the
Quality of Life
7, place de Fontenoy
75700 Paris
France

Professor M. Thiele-Wittig
Universität Gesamthochschule Duisburg
Fachbereich Haushaltswissenschaft
Lotharstrasse 65
4100 Duisburg
Federal Republic of Germany

Ms. M. Wagah
Department of Educational
Communication and Technology
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Special Guests

Mr. C. J. Chacha-Ogwe
Secretary-General,
Kenya National Commission
for UNESCO
Ministry of Education
Moi Avenue
P.O. Box 72107
Nairobi, Kenya

Professor P. Githinji
Vice-Chancellor
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Mr. P. Kangari
Dean of Students
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Mr. P. Lissouba
Director
UNESCO Regional Office for Science
and Technology (ROSTA)
P.O. Box 30592
Nairobi, Kenya

Dr. E. Maritim
University Secretary
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Mr. N'deima
Finance Officer
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Professor O.J.E. Shiroya
Dean of Arts
Kenyatta University
P.O. Box 43844
Nairobi, Kenya

Mr. R.D. Wambugu
Deputy-Chief
Inspector of Schools
Ministry of Education
P.O. Box 30040
Nairobi, Kenya

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Staff of Department of Home Economics, Kenyatta University

Prof. Ruth Oniang'o, Past Chairperson
Dr. Julia Gitobu, Present Chairperson
Dr. Olive Mugenda, Senior Lecturer
Dr. Asenath Sigot, Senior Lecturer
Dr. Dinah Tumuti, Lecturer
Dr. Melody Conlon (Visiting Lecturer)
Ms. Cecilia Darkoh, Lecturer
Ms. Karen Mburugu, Lecturer
Ms. Ruth Cheluget, Lecturer
Ms. Joyce Onyango, Lecturer
Ms. Catherine Ochoki, Lecturer
Dr. L. Muruli, Lecturer
Ms. Janerose Njue, Tutorial Fellow
Ms. Rose Otieno, Tutorial Fellow
Ms. Dorothy Rombo, Tutorial Fellow
Ms. Susan Maina, Graduate Assistant
Ms. Elizabeth Kuria, Graduate Assistant

Post-Graduate Students

Ms. Jane Kibuga
Ms. Jane Otieno
Ms. Alice Mwancha
Ms. Martha Nyangi

ANNEX II

UNESCO/KENYATTA UNIVERSITY SEMINAR

Composition of the Working Groups

Working Group on Nutrition

Ms. A. Burgess*
Dr. M. Conlon
Ms. C. Kiara
Ms. J. Kibuga
Ms. N. Kielmann
Ms. H. Kigutha
Dr. P. Lutz
Ms. J. Meme*
Ms. H. Missano*
Ms. J. Njue
Ms. C. Ochoki
Ms. P. Ochola
Prof. R. Oniang'o
Ms. D. Rombo
Ms. M. Wagah

* Moderators

Working Group on Early Childhood Care and Education

Dr. S. Bali*
Ms. F. Bahri-Benabbou
Ms. R. Cheluget
Ms. M. Ismail El Nadeef
Dr. H. El Saady
Dr. Y. Eraj
Mr. O.N. Gakuru
Ms. M. Kabiru
Prof. D. Kiminyu
Ms. J. Kimiywe
Dr. C. Kithinji*
Dr. B. Koech
Ms. S. Maina
Ms. A. Mwancha
Ms. M. Nyangi
Ms. J. Onyango
Ms. J. Otieno
Ms. R. Otieno
Ms. L. Rubinstein
Dr. A. Sigot*

* Moderators

Working Group on Rural Development

Ms. J. Fritsch
Dr. J. Gitobu
Ms. D. Kababu
Dr. R. Kapiyo
Ms. E. Kuria
Dr. J. Lutz*
Ms. G. Maina
Ms. R. Masya
Ms. K. Mburugu*
Dr. O. Mugenda
Dr. L. Muruli
Dr. K. Mwiria
Dr. R. Mwonya
Ms. R. Nguchu
Ms. I. Opdoel
Ms. S. Othieno
Prof. M. Thiele-Wittig
Dr. D. Tumuti*

* Moderators

ANNEX III

REPORT OF WORKING GROUP ON NUTRITION

1. **Suggestions for improving the nutrition-related courses of the proposed general 8-4-4 Bachelor of Education (BEd) Home Economics Programme**

General Comments

The group felt that the present curriculum concentrated too little on nutrition and too much on clothing and textiles. It was also believed that students should be exposed to community issues relating to meeting basic needs (e.g., nutrition, health, shelter, etc.). It was suggested that students undertake as part of their course work field work in a community nutrition programme or community health centre. Electives should be introduced.

1.2 **Suggestions for Specific Courses**

HE 201 - "Principles of Food and Nutrition"

Human requirements for energy, nutrients & water should be included and removed from HE 40.

HE 203 - "Health Education"

Nutrition must be included;

The course outline should read "working towards healthy well-nourished individuals"; and the course should cover the five components of primary health care of which nutrition is one;

Because nutrition-related education is an important area, the group suggests putting HE 203 into the 4th year and putting HE 406 Family Life Education into the 2nd year.

HE 206 - "Meal Management and Service"

This should be revised and should include a course on basic food preparation and processing.

HE 303 - "Curriculum & Instructions in Home Economics"

The course outline should include: (a) "...various levels including the community,"(b)"...objectives, needs of the learner and community"

HE 307 - "Institutional Management & Personnel Management"

The course is more appropriately designated as "Institutional Management"; and should include: (a) "preparation of nutritious school snacks and meals"; and (b) "...preparation and selling of low-cost nutritious foods".

HE 400 - "Scientific Principles of Food Preparation"

This should be revised to "Applied Food Preparation and Processing" (it was felt that a practical applied course in this area is needed).

Parts of the course description should be rewritten as: "...The practicals will be concerned with the demonstration of how food behaves under different conditions including household level preservation and storage for the family. It will cover food-related income-generation.

The course should be as practical and community-oriented as possible.

HE 401 - "Human Nutrition"

The course outline should not cover requirements, as these have been transferred to **HE 201** *but should cover nutrition at different ages, with special focus on maternal and child nutrition.*

Instead of listing nutritional disorders, the latter part of the course description should read "Etiology prevalence, distribution, consequences and treatment of selected nutritional disorders..."

HE 404 - "Nutritional Assessment and Community Nutrition"

The course outline should include: "Evaluating of existing nutrition interventions and programmes" and identifying other kinds of nutrition promotion activities.

1.3 Suggestions for an Additional Course

A new course on "Food Production/Food Security" is considered essential. This course would cover food supply at the household level, including adequacy, availability, accessibility; assessment of the food supply situation at community and household level. Space for this course might be made by combining courses or replacing one of the "Clothing and Textiles" courses.

2. Suggestions and comments for the proposed BSc Home Economics (Foods and Nutrition) Programme (to commence upon the upgrading of the Department to a full Faculty)

2.1 General Comments

There was general agreement that the programme needs a thorough review; there are many important topics which are lacking or need strengthening, including:

- *small-scale food production*
- *food security*
- *the East African food & nutrition situation and priority nutrition problems*
- *food and nutrition policies and programmes*
- *causation of malnutrition*
- *nutritional surveillance*
- *women's health and nutrition*
- *child health and nutrition*
- *quantitative and qualitative research methods*

There should also be opportunities for field work in poor and rural communities.

2.2 Suggestions for Specific Courses

1st Year

"Introduction to Foods and Nutrition" - *See suggestions for* **HE 201**. *The title would more appropriately be designated as "Principles of Foods and Nutrition".*

"History and Philosophy of Home Economics" *to be entitled "Foundations of Home Economics" (see comments from working group on rural development).*

2nd Year

"Health Education" - *See comments for* **HE 203.**

"Meal Management" - *See comments for* **HE 206.**

3rd Year

The group suggested that students could start to take either the "Nutrition" or the "Institutional Management" option of their degree programme in the 3rd year instead of in the 4th year of their studies.

HEED 300 - "Introductory Statistics"

This course should include research methods and be supplemented by a course on quantitative methods later in the programme.

HENI 311 - "Food Science"

See comments for **HE 400.**

HENI 312 & 319 - "Organic Chemistry 1 and 2"

These courses should be combined into one unit.

HENI 316 - "Experimental Foods"

This should be renamed "Experimental Food Preparation and Processing". After completing **HENI 311 & 316**, *students should be able to apply knowledge acquired and develop appropriate new recipes and products using local resources including underutilized foods.*

HENI 317 - "Food Preservation Techniques"

This course should include appropriate technology.

HENI 318 - "Methods in Nutrition Education"

The title should be changed to "Nutrition Education" and should include the planning, development and implementation of nutrition education including message and teaching-learning material design and use of participatory methods.

HENI 320 - "Personnel Management" & HENI 418

These 2 courses should be fused and given in the 3rd year to all students. Counselling skills should be included.

HENI 416 - "Biochemistry"

This course should be moved to the 3rd year 2nd semester.

4th Year

HENI 411 - "Human Nutrition"

This course should be called "Advanced Human Nutrition".

HENI 412 - "Seminar in Foods & Nutrition"

This should include aspects of **HENI 413** *"Consumer issues".* **HENI 413** *should be given to institutional management students only.*

HENI 414 - "Therapeutic Nutrition"

See comments for **HE 401**. *This course needs more time.*

HENI 415 - "Community nutrition"

See comments for **HE 404**. *This course needs more time.*

FIELD WORK: The group suggested that students spend 2 weeks on preparation, 6 weeks in the field and 4 weeks discussing their experiences. Each student should be supported by an advisor from the faculty during the field work.

3. General Comments and Suggestions

The group recommended that the faculty address the following issues:

(a) how the faculty can develop the competencies needed to introduce experiential learning;

(b) how to make the programmes more oriented towards the needs of poor and rural communities and disadvantaged groups;

(c) how to motivate students to be concerned with conditions of the poor and rural areas;

(d) how staff and students can keep up-to-date with developments in nutrition and related topics;

(e) how to ensure that nutrition graduates from different institutions can work together effectively;

(f) how to network with other home economics institutions within the region.

The group supported the faculty's desire for links between the appropriate technology and home economics departments. The group suggested there should be harmonization of course titles to reflect the different levels of similar courses.

REPORT OF WORKING GROUP ON EARLY CHILDHOOD CARE AND EDUCATION

1. **Use of the Child Care Centre**

   -- early child care and education (pre-school) programme;

   -- practical application of early child care, education and other relevant courses (i.e. nutrition) of the home economics training programme;

   -- observation and applied research;

   -- in-service courses for educators, child care providers and others;

   -- utilization by students of the "Early Childhood Care and Education Programme" to be established in another department of Kenyatta University.

2. **Users and Beneficiaries**

   -- children enrolled in the Centre, and their parents;

   -- students and lecturers of the Department of Home Economics and other Departments of Educational Psychology, Special Education, Early Childhood Education, etc.;

   -- researchers;

   -- pre-school junior training programme participants;

   -- pre-school teachers from rural and disadvantaged communities.

3. **Needs of the Department to help implement their proposed degree programme on Child and Family Studies**

   The group felt that the students who opt for this specialization will need practical training in the following areas: maternal and child health, child development, learning opportunities for pre-school children in the disadvantaged communities, and the family environment (different socio-economic groups).

4. **How best to meet these demands of the course requirements for the Child and Family Studies specialization**

   -- The Child Care Centre will provide an environment to interact with pre-school children.

   -- Students will need exposure to other facilities to appreciate the range of conditions that surround children in Kenya (e.g., students should have the opportunity to live

with families in the rural areas for several weeks to observe child development in this context).

5. **Operation of the Child Care Centre**

Curriculum of the Child Care Centre

- The Kenya Institute of Education should be used as a resource for curriculum development;

Administration

- The Center should be attached to the Home Economics Department;

- the day-to-day running of the Centre should be in the hands of a Board on which the parents should be represented;

- A lecturer (preferably the one teaching child care courses) should coordinate the training and research activities of not only the faculty but also the other University departments who are interested in the use of the Centre for either purposes of teaching or research.

Centre Personnel and Qualifications

- Head
  'O' level, Early Childhood Education, plus three or more years of experience;

- 2 Teachers
  'O' level, Early Childhood Education, plus at least 2 years of experience;

- 1 Assistant
  K.C.P.E., Early Childhood Education, plus 2 years of experience;

- 1 Attendant
  K.C.P.E., plus should be willing to work and learn from the others.

NOTE: The staff members should act as resource persons/trainers during in-service training sessions.

Selection of Children

- The number of the children will depend on the space available;

- the age of these children should be 3-4 years, and both sexes should be equally represented;

- plans should be prepared to expand the present facilities to accommodate 5 year olds.

Services offered

- Education: *art, music, games*
- Health: *preventive health services in consultation with the Kenyatta University medical doctor*
- Teeth and Eyes: *dental and eye exams in consultation with the local dental association and others*

6. **Suggested course content of the Family and Child Studies component of the Kenyatta University Department of Home Economics training programme**

-- Education and care of children should be covered, including courses in special education;

-- Health and nutrition (advanced courses), communication skills - leadership, interpersonal and community mobilization skills should form an essential component of this course;

-- Appropriate electives should be offered, (in its present form the programme does not give students any choice of courses) as well as courses in research skills.

7. **Out-reach programme**

The out-reach programme, in addition to reaching out to rural and urban communities, should bring teachers, trainers, students and interested community members to the Child Care Centre, where they may take advantage of the materials and expertise available. Both Kenyatta University and the larger community should be encouraged to visit the Centre.

Groups to benefit from the out-reach programme:

Untrained pre-school teachers - for whom in-service training programmes could be mounted;

Pre-school teachers - with the objective of continuing education;

Pre-school teacher trainers - to expose them to new ideas and teaching materials, identify and discuss problems they encounter in the field;

University students who will go out and work in various communities - rural and urban. This will not only train the students but will also help in resource distribution of both trained personnel and materials.

8. Applied Research

Research activities may include: educational material development and pre-testing; study of child-rearing practices; assessment of various pre-school education programmes; design of alternative methods of pre-school teaching.

9. General Recommendations

1. As it stands, the programme appears to be rather fragmented. There is a need to offer courses at various levels (introductory, intermediate and advanced); this will help link courses from one year to the next and from one theme to another.

2. The Department needs to emphasize the practical/application component of the course work by requiring students to carry out field work in rural and poor communities.

REPORT OF WORKING GROUP ON RURAL DEVELOPMENT

1. **Review of the proposed 8-4-4 curriculum (Department of Home Economics)**

HE 100: The title should be "Foundations of Home Economics".
This course should include: History and Development of Home Economics; Philosophy of Home Economics; Home Economics and the Kenyan Society; Regional and International Perspective of Home Economics; Ecosystems and the Integrative Nature of Home Economics.

HE 101: The title should be "Science and Technology in the Home".
This course should include a section on the use of appropriate technology.

HE 103: The title should be "Textiles and Principles of Arts and Design".
This course should include a section on the utilization of local materials and resources and crafts.

HE 104: The title should be "Household Equipment and Technology Application".
This course should include a section on new developments in Appropriate Technology.

HE 203:. "Home Management Living"
A section on the utilization of rural facilities should be included.

HE 301: The title should be "Housing and Environmental Problems".
A section on how to enhance the rural housing environment should be included, (e.g., sanitation, waste disposal, energy and fuel, etc.).

HE 303: "Curriculum and Instruction in Home Economics"
In this course, the concept of community education and of community skills should be taught.

HE 305: "Consumer and Family Economics"
The concept of the household as a socio-economic institution should be included in this course.

HE 307: "Institutional and Personnel Management"
A section on the organization and management of community development projects should be included. In addition, managerial skills for self-employment should be taught as a separate topic.

HE 400: "Scientific Principles in Food Preparation"
A section on the preparation and preservation of foods in rural areas, as well as food storage techniques should be included.

HE 401: "Nutrition in Development and Disease"
A section on nutrition behaviors and practices in both urban and rural areas should be included.

HE 404: "Nutrition Assessment and Community Nutrition"

The concept of community participation should be introduced and report writing skills taught.

HE 407: The title should be "Home Economics and National Development". *Theories of rural development as well as extension work and methodologies should become part of this course. Contemporary issues of Home Economics should be incorporated into all preceding units and be taught as a subject of its own.*

2. **Proposed changes to the 8-4-4 curriculum proposal and/or when the Faculty of Home Economics will be established, and take into consideration the reorientation of the curriculum toward rural development**

The following list of new courses are proposed for inclusion in the overall curriculum, either in the near future or when the Department becomes a Faculty:

1. Child Care
   There should be additional courses in child care, also, as they relate to the planned out-reach programme.

2. Statistics
   Statistics should be a separate course from Research Methodology.

3. Contemporary issues in Home Economics
   Contemporary issues of Home Economics should be incorporated into all units and later be taught as a course subject of its own.

4. "Community Education and Participation" *is proposed as a new course.*

5. "Household and Family Dynamics" *is proposed as a new course.*

6. "Management Skills for Small Business Entrepreneurship" *is proposed as a new course.*

7. Practicum and/or Seminar Series
   This should be introduced either within the curriculum or as an additional learning opportunity.

8. Field Studies
   These should be initiated (e.g., in areas such as dietary surveys; family practices; work studies; roles of women; health practices; community needs survey).

9. "Structural and Functional Changes of Households and Families" or "Social Changes and the Family" *is proposed as a new course.*

10. "Regional and International Trends and Implications in Home Economics" *is proposed as a new course.*

NOTE: The group took into account that some of the above-mentioned subjects are included as "topics" in the present courses, but considers the area of study important enough to become courses in their own right.

3. General comments and proposed changes for considerations and deliberations

1. The proposed course changes, modifications and inclusions as listed in points 1 and 2 should be considered for approval.

2. There should be an appropriate balance of courses among textiles, nutrition and child care courses.

3. Similarly, an appropriate balance should be maintained between content area courses and those that advocate social attitudes, managerial skills, practical applications and problem-solving approaches (balance between theory and practice).

4. There should be continuous dialogue between Kenyatta University staff/students and Egerton staff/students to ensure harmonization between the work of teachers and that of extension workers.

5. The Department of Home Economics staff should:

   (a) examine the 8-4-4 primary and secondary school home economics syllabus thoroughly; the University curriculum should be built upon knowledge and skills already acquired;

   (b) develop a profile of the competencies and expected outcomes of Kenyatta University graduates, with a special eye to future teaching responsibilities in the 8-4-4 system, career opportunities and future learning;

   (c) examine the present curriculum with an eye to merging some of the courses (e.g., **HE 302** and **HE 402**) to provide "room" for additional courses;

   (d) examine the present curriculum with an eye to shifting some of the 4th year courses into earlier years to provide an opportunity for synthesis (wrap-up) in the final year;

   (e) require all students to complete a one-year research study/project with a rural bias as a final year expectation and the performance of the student in this requirement would be included as a final component;

   (f) require all students to be involved in the organization and implementation of a community development project while on teaching practice and the performance be included as part of the teaching practice assessment.

   (g) encourage staff members to include problem-solving approaches and contemporary issues (trends) in all subject courses, even if "Contemporary Issues" becomes a course itself; and

(h) establish basics (first 2-year courses) that promote the integrated nature of home economics (as a multi-disciplinary subject) and encourage positive attitudes and commitment on the part of the students.

6. It was suggested that when the Department becomes a Faculty, in addition to the already-proposed 5 Departments, there should be a Department of "Urban and Rural Studies" that offers courses such as Appropriate Technology, Urban and Rural Research and Surveys, Sociology of Rural Areas and their People, Organizing and Managing Community Development Activities, Urban and Rural Areas Issues and Problems.

7. Similarly, when the Department becomes a Faculty, there should be: a reorientation in-service type programme for present staff members; a continuous staff development programme to update and improve knowledge and skills of faculty members; a recruitment drive to identify new staff members with rural development or community development skills and experience; and specialized faculty members in subjects such as Economics, Microbiology, etc., so that instruction in these courses may remain in the Faculty.

4. **Out-reach programme**

A plan of action was developed to serve as a guideline and format for Kenyatta University Home Economics staff to further plan and detail more specific out-reach programme activities with subsequent elements.

Proposed Outreach Programme for Kenyatta University
Faculty of Home Economics (Department of Home Economics)
Nairobi, Kenya

PLAN OF ACTION

A. Objectives of the Rural Outreach Programme

1) To serve as a training ground for students to understand conditions in rural areas and apply knowledge and skills to the reality of life in these areas;

2) To promote interaction between staff and students and communities;

3) To provide a basis for research and experimentation;

4) To promote community participation through teachers and internship programmes and access to immunization, population education, health care, nutrition education, etc;

5) To promote advocacy programmes and participatory activities in skills training, income-generating activities, community leadership, etc.;

6) To integrate into existing teaching-learning materials concepts for rural development where appropriate.

B. Programme Review:

Activities	Objectives Served	Target Groups	Responsible Parties	Resource & Materials	Anticipated Outcomes
1. Seminars & workshops focusing on rural development	1), 2), 5), and 6)	KU staff, Min. of Ed. personnel, teachers, NGOs	KU staff in collaboration with sector Ministries	KU Staff, extension personnel, local leaders, professionals in the sector	- Advocacy programmes, - community-oriented development processes, - attitudes & skills to promote rural development
2. In-service training sessions focusing on rural development	1), 2), 3) and 6)	Teachers	KU staff and Ministry of Education officials	Secondary schools, local facilities & resources/media-	Guidelines for curriculum reorientation for rural development
3. Teaching practice experiences in rural areas	1), 2) and 4)	Student teachers/teaching practice, supervisors	KU staff, secondary school supervisors	Teaching guides, local materials and leaders	- Skills and knowledge in community based teaching learning experiences

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4. Information documentation & training in population, sanitation, health issues, H.E. etc.	1), 2), 4) and 6)	Relevant groups in community (local leaders, mothers' groups, health groups, etc.)	School personnel, student teachers, extension workers	Resource persons from related agency or University department, local experts in crafts and artisanat	- Community sessions/ assembly, - council meetings on issues, - community workers/people in training programmes, - training guidelines or modules
5. Training in skills development, small businesses & management	1), 2) and 5)	Women, out-of-school youth, artisans, etc.	Student teachers, extension workers, community action groups, (NGOs)	Local experts in crafts, KU staff as resource persons, instructional kits & materials	- Self-employment opportunities, - products crafted from developed skills, - self-reliant entrepreneurs, - training manuals, guidelines

6. Community survey for baseline data and needs assessment	2) and 3)	Community subjects or respondents	Student teachers, extension workers, secondary school students, community leaders	KU staff, data-gathering instruments, statistical tools, recording equipment	- Situation analysis in relevant communities, - community profile, - community participation in research
7.Information/ communication support for primary health care activities	1), 2), 4) and 6)	Mothers, schools, children, women's groups, parents	Student teachers, health workers, teacher-supervisors	Health professionals, paramedics, KU staff, health workers	- Increased enlistment in health services programmes, - Teaching units for health & teaching aids, - changes in health behaviour
8. Development of plan of action with community groups on a project for rural improvement	3), 4) and 5)	Community organizations, community leaders	cooperatives, associations, clubs, etc.	KU staff, school personnel, extension workers, student teachers	- Group-sponsored communal activity, planned and organized by a specific group, - a completed self-help project

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C. Implementation Strategies

1) Communication Support
2) Baseline survey coupled with participatory research
3) Situation analysis
4) Developing a Plan of Action/Project Planning
5) Launching a project
6) Out-of-School learning
7) Participatory methods in community education
8) Multi-sectoral collaboration
9) Use of local materials and expertise
10) Pre-service and in-service training of teachers
11) Skills development in the community
12) Institutional support and infrastructure
13) Curriculum at local level

D. Evaluation Techniques

1) Feedback on progress of activities
2) Degree of achievement of objectives
3) Quantity and quality of outcomes
4) Effectiveness of processes and materials
5) Utilization of allocated resources
6) Community participation - nature and extent

ANNEX IV

THE 8-4-4 EDUCATIONAL SYSTEM IN KENYA

An Information Brief

Source: From Ministry of Education, Republic of Kenya, Nairobi, 1984

Organization and Structure of the Education System

The system of education has undergone considerable structural changes in the last two years.

The old system, which is being phased out consisted of 7 years of primary education, 4 years of ordinary level secondary education, 2 years of advanced level secondary education and 3 years of minimum university education. In 1983 the 8-4-4 system of education was introduced.

This new system has the following main elements:

- Structure: 8 years of primary education,
  4 years of secondary education and
  4 years of minimum university education;

- Curriculum: A broad-based curriculum with emphasis on practical and technical skills;

- Assessment: Continuous assessment of formal, informal and non-formal learning activities;

- Training Opportunities: Increased training opportunities for primary and secondary school leavers.

Chart A shows the structure of the new system of education.

(a) Primary Education

At the end of primary education, pupils sit for the Kenya Certificate of Primary Education (KCPE), a terminal examination which is also used for selecting candidates for a 4-year secondary course or for training in various trades. During the period under review, there are over 5 million children in all the primary schools.

(b) Secondary Education

At the end of four years of secondary education, students will sit for the Kenya Certificate of Secondary Education Examination (KCSE), also a terminal examination which will be used for selecting candidates for university education or for training in various trades and professions. At the moment there are half a million secondary school students.

(c) Post-primary and Post-secondary Training Programmes

Primary school leavers who do not enter secondary schools have the opportunity to be admitted into post-primary training institutions offering different trades at Proficiency, Artisan and Craft skill levels.

Students who successfully complete Craft Training courses can proceed for Technician Diploma Programmes. Secondary school leavers who do not enter university will have the opportunity to be admitted into post-secondary institutions for crafts, ordinary diploma and higher diploma programmes.

In addition to these technical training programmes, there will be opportunities for training in Nursing, Agriculture, Veterinary Medicine and other fields in institutions administered by the relevant ministries for graduates of both primary and secondary education.

(d) University Education

Universities will design and develop basic degree courses of study to cover four years. Specialised degree courses like Medicine, Architecture, etc. will take longer periods.

CURRICULUM

PRIMARY EDUCATION

(a) Objectives of Primary Education

To provide learning opportunities which will enable pupils to:

(i) acquire literacy, numeracy and manipulative skills;
(ii) develop self-expression, self-discipline, self-reliance and full utilization of their senses;
(iii) develop ability for clear logical thought and critical judgement;
(iv) experience a meaningful course of study which will lead to enjoyment and successful learning and a desire to continue learning;
(v) acquire a suitable basic foundation for the world of work in the context of economic and manpower needs of the nation;
(vi) appreciate and respect the dignity of labour;
(vii) develop desirable social standards and attitudes;
(viii) grow into strong and healthy persons;
(ix) develop a constructive and adaptive attitude to life based on moral and religious values and responsibilities to the community and the nation;

(x) appreciate their own as well as other peoples' cultural heritage, develop aesthetic values and make good use of leisure time;
(xi) grow towards maturity and self-fulfillment as useful and well-adjusted members of society;
(xii) develop awareness and understanding of their immediate environment and foster positive attitudes to other countries and to the international community.

(b) Primary Education Curriculum

This consists of:

(i) English
(ii) Kiswahili
(iii) Mathematics
(iv) Science
(v) Home Science
(vi) Arts and Crafts
(vii) Music
(viii) Geography, History and Civics (GHC) - a combined course
(ix) Religious Education
(x) Physical Education
(xi) Mother Tongue
(xii) Business Education
(xiii) Agriculture

At the end of eight years of primary education, candidates are examined in the following six Papers:

(i) Kiswahili Language and Composition
(ii) English Language and Composition
(iii) Mathematics
(iv) Science and Agriculture
(v) Home Science and Business Education
(vi) Arts and Crafts, Music and Religious Education
(vii) Geography, History and Civics (GHC) - a combined course

SECONDARY EDUCATION

(a) Objectives of Secondary Education

Secondary education will:

(i) lead to the all-around mental, social, moral and spiritual development of the learner;

(ii) enable the learner to choose with confidence and cope with vocational education after school;
(iii) build a firm foundation for further education;
(iv) ensure parity in the cognitive, psychomotor and effective skills for all students at this level in the country;
(v) lead to the acquisition of attitudes of national patriotism, self-respect, self-reliance, cooperation, adaptability, sense of purpose, integrity and self-discipline, respect and consideration for others, loyalty and service to the home, society and the nation;
(vi) prepare the learner to make a positive contribution to the development of their society.

(b) Secondary Education Curriculum

A curriculum incorporating at least 13 subjects will be offered by all pupils in Forms I and II. This curriculum is broad-based and practically-oriented and consists of the following subjects:

(i) English
(ii) Kiswahili
(iii) Mathematics
(iv) Physical Sciences
(v) Biological Sciences
(vi) Geography
(vii) History and Government
(viii) Religious Education
(ix) Agriculture
(x) One subject from:
- Home Science
- Metal Work
- Wood Work
- Drawing and Design
- Electricity
- Power and Mechanics

(xi) One subject from:
- Music
- Art and Design
- Foreign Languages
- Business Education

(xii) Social Education Ethics
(xiii) Physical Education

At the end of four years of secondary education, students will sit for at least 10 subjects selected from groups I, II, III and IV as follows:

GROUP I		SUBJECT CODE
1.	English	101
2.	Kiswahili	102
3.	History and Government	111
4.	Geography	112
5.	Mathematics	121
6.	Biological Sciences	135
7.	Physical Sciences	134
8.	Chemistry	133
9.	Physics	132
10.	Biology	131
GROUP II		
1.	Islamic Religious Education	213
2.	Christian Religious Education	212
3.	Social Education and Ethics	214
4.	Hindu Religious Education	215
GROUP III		
1.	Home Science	322
2.	Art and Design	323
3.	Agriculture	332
4.	Wood Work	343
5.	Metal Work	344
6.	Building Construction	345
7.	Power Mechanics	346
8.	Electricity	347
9.	Drawing and Design	348
GROUP IV		
1.	French	401
2.	German	402
3.	Music	424
4.	Accounting	425
5.	Commerce	426
6.	Economics	427
7.	Typewriting with Office Practice	428
8.	Arabic	403

Candidates must sit for at least ten subjects selected from Groups I, II, III and IV as follows:

(i) The five subjects code numbers 101, 102, 111, 112 and 121 in Group I;

(ii) One subject from Group II and;

(iii) Either the three subjects code numbers 131, 132 and 133 or the two subjects code numbers 134 and 135 in Group I;

(iv) Candidates offering subjects 131, 132 and 133 in Group I must also enter for at least one subject from either Group III or Group IV;

(v) Candidates offering subjects 134 and 135 in Group I must enter for at least one subject from Group III and at least one subject from Group IV.

UNIVERSITY EDUCATION

The Universities Act of 1985 established the Commission for Higher Education to regulate university education.

The aims of university education are to:

- produce mature and conscientious graduates with the ability and desire to contribute to the development of the country;

- to develop and transmit knowledge through research and training;

- foster national consciousness and unity, preserve knowledge and stimulate the intellectual life and cultural development of the country;

- produce high level manpower in the various scientific and technological fields to meet the social, cultural and economic needs of the nation.

At the moment, there are four national universities with a total student enrolment of over 20,000. In the 1988/89 academic year, all the universities enrolled over 7,000 new students. The four national universities are as follows:

- University of Nairobi
- Moi University
- Kenyatta University
- Egerton University

University of Nairobi

The University is made up of six Colleges. These are:

(a) College of Biological and Physical Sciences
(b) College of Humanities and Social Sciences
(c) College of Architecture and Engineering
(d) College of Health Sciences
(e) College of Agriculture and Veterinary Medicine
(f) College of Adult and Distance Education

The University of Nairobi has also a number of Institutes, Schools and Units that supplement its academic Faculties and Disciplines.

These are:

- Institute of Adult Studies
- Institute of African Studies
- Institute of Computer Science
- Institute of Development Studies
- School of Journalism
- Population Studies and Research Institute

The University of Nairobi has the following Faculties:

(a) Faculty of Science
- Botany
- Chemistry
- Geography
- Mathematics
- Meteorology
- Physics
- Zoology
- Computer Science

(b) College of Humanity and Social Sciences

(i) Faculty of Arts
- Economics
- Geography
- Government
- History
- Linguistics and African Languages
- Literature
- French Studies (Sub-department)
- Philosophy

- Religious Studies
- Sociology
- Diplomacy Training Programme
- Anthropology
- Education (Arts)

(ii) Faculty of Law
- Private Law
- Public Law
- Commercial Law

(iii) Faculty of Commerce
- Accounting
- Business Administration
- Management Science

(c) College of Architecture and Engineering

(i) The Faculty of Architecture, Design and Development

(ii) The Faculty of Engineering

(d) The College of Health Sciences

(i) The Faculty of Medicine

(ii) The Department of Pharmacy, Dentistry and Advanced Nursing

(e) The College of Agriculture and Veterinary Sciences

(i) Faculty of Agricultural Engineering

(ii) Faculty of Veterinary Medicine

(f) The College of Adult and Distance Education

(i) Faculty of External Degree Studies

(ii) Institute of Adult Studies

(iii) Diploma in Adult Education

(iv) School of Distance Studies (formerly Correspondence Course Unit)

Moi University

At the present time, Moi University has no constituent Colleges but still operates at Faculty level. The Faculties and Department courses that exist include:

(a) Faculty of Forest Resources and Wildlife Management

- Forestry
- Wood Science and Technology
- Wildlife Management

(b) Faculty of Technology

- Electrical and Communication Technology
- Production Technology

(c) Faculty of Science

- Mathematics
- Physics
- Chemistry
- Botany
- Zoology

(d) Faculty of Education

(e) Faculty of Social, Cultural and Development Studies

(f) Faculty of Information Sciences

- Information Science

Kenyatta University

Kenyatta University has four Faculties which have various Departments as follows:

(a) Faculty of Education

- Educational Psychology
- Educational Planning
- Administration and Curriculum Development
- Educational Foundation
- Educational Communication and Technology

- Physical Education and Games
- Home Economics

(b) Faculty of Arts

- Geography
- Philosophy and Religious Studies
- Literature
- Languages and Linguistics
- Music
- History
- Business Education
- Fine Art

(c) Faculty of Science

- Botany
- Chemistry
- Mathematics
- Physics
- Zoology

(d) Faculty of Commerce

- Business Administration
- Accounting
- Economics

Egerton University

Egerton College was established in 1939 as an Agricultural School. On 30 July 1986 it became a Constituent College of the University of Nairobi through an Act of Parliament. It attained full University Status through the 1987 Act.

Egerton University has the following Faculties and Departments:

(a) Faculty of Agriculture

- Animal Health
- Animal Agronomy
- Dairy and Food Technology
- Agricultural Engineering
- Natural Resources
- Horticulture

(b) Faculty of Science

- Physical Sciences
- Biological Sciences

(c) Faculty of Arts and Social Sciences

(d) Faculty of Education and Human Resources

- Education and Extension
- Agriculture and Home Economics

In addition to Degree programmes, Egerton University also offers the following Diploma programmes:

- Animal Production
- Animal Health
- Soil and Water Engineering
- Farm Power and Machinery
- Dairy Technology
- Horticulture
- Agriculture
- Range Management
- Forestry
- Wildlife Management

Besides the local universities, there are about 10,000 Kenyan students in various universities abroad.

The System of Teacher Education

The following are the aims of teacher education:

- To develop the basic theoretical and practical knowledge about the teaching profession, so that the teacher's attitude and abilities can be turned towards professional commitment and competence;

- To develop in the teacher the ability to communicate effectively;

- Bearing in mind the child as the centre of education, teacher education should prepare teachers who can:

  (a) provide suitable learning opportunities;

  (b) develop the child's communicative skills;

(c) develop the individual child's potential abilities to their maximum through a variety of creative learning experiences;

(d) develop the child's sense of citizenship and national attitude;

(e) develop the child's ability in critical and imaginative thinking in problem-solving and self-expression;

(f) develop positive attitudes to the moral and religious values in his community.

- To create a national consciousness for educational excellence in every teacher;

- To provide opportunities to develop special interests and skills and to promote initiative in the teacher;

- To develop in the teacher the ability to adapt to change or new situations;

- To develop an awareness and appreciation of innovation in the field of education and an ability to utilize them;

- To develop an awareness of the principles which underline good human relationship and use these in their dealings with the children and the community;

- To promote national unity, national development and social equality;

- To foster in the teacher an appreciation and respect for our rich and varied cultural heritage.

Teachers are trained to teach at six levels, i.e., pre-primary, primary, special education, secondary, adult education and technical institutions.

Training for Pre-Primary School Teachers

The pre-primary teachers undergo an in-service training programme for two years, organized in fifteen District Centres for Early Childhood Education (DICECE) established in a number of districts to serve the whole country. The course is provided for pre-primary teachers with a minimum qualification of at least 30 points in the Kenya Certificate of Primary Education.

The following subject areas are covered:

Subject Area

- Child Development
- Pre-school Curriculum
- Organization, Planning and Management
- Arts and Crafts
- Music and Movement
- Physical and Outdoor Play
- Language Activities
- Environmental Activities
- Mathematics
- Health and Nutrition
- History, Development and Status of Pre-school Education
- General Knowledge
- Preparation for Field Experience

This is a two-year programme composed of six residential sessions of three weeks duration each and they take place during normal school holidays.

Primary Teacher Training

Two types of training programmes are offered, namely: pre-service and in-service.

A two-year pre-service training is offered in the present fifteen Primary Teachers Colleges maintained by the Government and two Primary Teachers Colleges run by missionaries. Arrangements have been made to build more colleges and reasonable progress has been made in this direction.

In-service training is organized in fifteen training colleges during the holidays. Three-quarters of the syllabus content is covered by correspondence study materials produced by the College of Adult and Distance Education, University of Nairobi.

Three grades of primary teachers are trained, namely P3, P2 and P1. The P3 course is offered to holders of the Kenya Primary Certificate of Education, while the P2 is taken by holders of the Kenya Junior Secondary Examination (KJSE) or Kenya Certificate of Education holders with at least Division III.

Special Education Teachers

The Kenya Institute of Special Education (KISE) runs two training programmes for teachers of handicapped children, as follows:

- The Diploma Teachers Programme is a two-year course, recruitment to which is open only to teachers at P1 level who have served for at least

three years. Such teachers must in addition have a Principal Pass in the Kenya Advanced Certificate of Education.

- The In-service Teachers Training Programme is a three-year course for P1 teachers already teaching in Special Schools.

Teachers Training for Secondary Schools

Training for secondary school teachers is offered in six Diploma-level colleges and the four national universities.

The Diploma courses are at the moment offered for two years to students with the Kenya Advanced Certificate of Education. It is expected that the students undergoing the 8-4-4 system of education will, after passing the Kenya Certificate of Secondary Education following completion of a four-year secondary school course, take a three-year training course for Diploma courses, either in the Humanities or Sciences in the six Diploma colleges in the country. Kenyatta University, which has been at the forefront of teacher education, will continue to offer undergraduate and post-graduate courses in education. A post-graduate Diploma course is offered to graduate students who may want to become teachers but never took education courses in their graduate course.

Adult Education Teachers

All adult education teachers undergo an induction course and various in-service courses. The National Literacy Curriculum is divided into three subjects:

- Reading and Writing;
- Numeracy; and
- Kiswahili.

The Department of Adult Education .

The Department of Adult Education has launched an Adult Education Teacher Training Course which aims at giving adult teachers the necessary skills and knowledge, and also attempts to inculcate positive attitudes, in order that the teachers become effective facilitators in the literacy and adult education programmes.

The Adult Education Teacher Training Curriculum is designed to be effected through distance learning, mainly through correspondence education and radio. It also incorporates face-to-face instruction.

The course covers the following eight areas of study:

- Introduction to Adult Education
- Policy and Development of Adult Education in Kenya

- Psychology of Adult Learning
- Human Relations and Communication Skills
- Curriculum Development
- Adult Education Methods
- Kiswahili
- Effective Evaluation for Adult Education

The course is jointly organized by the Kenya Institute of Education, Department of Adult Education and the College of Adult and Distance Education of the University of Nairobi.

Technical Teachers Training Programmes

The Kenya Technical Teachers College has been offering the following Diploma teachers programmes since its inception:

- 4-year integrated (pedagogy and skill development) programmes for students with relevant 'O' level qualifications from the former technical secondary schools.

- 3-year integrated (pedagogy and skill development) programmes for 'A' level holders with relevant qualifications for business studies and industrial education courses.

- 1-year pedagogy for holders of technical professional qualifications at Craft III or ordinary diploma in relevant fields.

- Instructor training course in block release, lasting 5 to 12 weeks.

In order to meet the demand for technically-qualified teachers to teach practical or vocational subjects in the 8-4-4 system of education, a one or two-year technical teacher programme at Certificate and Diploma levels has been introduced.

(a) Certificate Technical Teachers Programmes

This programme is intended for teachers of technical/vocational subjects in youth polytechnics and primary schools. To be recruited into this programme, a trainee should possess any of the following or equivalent qualifications:

(i) Craft Part II or New Craft Certificate
(ii) Final Craft Certificate
(iii) Final Proficiency (DIT) Certificate
(iv) Certified Public Accountants Part I Certificate

(b) Diploma Technical Teachers Programmes

This programme is intended for teachers of technical or vocational subjects in technical training institutes, institutes of technology, vocational training centres and secondary schools.

To be recruited into this programme a trainee should possess any of the following or equivalent qualifications:

(i) Diploma in Engineering or Applied Courses
(ii) Technician Part 2 or Part 3
(iii) Craft Part 3
(iv) Certified Public Accountants Part 2 Certificate
(v) Diploma in Business Administration, Management or Co-operative Management

EDUCATIONAL DEVELOPMENTS 1986-1988

New Policy Orientations

The long-term objectives of education were formulated by the first Kenya Education Commission in 1964. These aims and objectives have been articulated in various successive Education Review Committees and Development Plans. However, the emphasis of any one of them has often depended on the Government's priority needs in a given Plan period. For instance, in the current Plan period, the emphasis is on quality, relevance and utility, hence the present orientation towards practical subjects as a preparation for post-primary and post-secondary technical and vocational training.

Changes in Content and Structure

In the last two years, practical steps have been taken to make Kenya's education system more relevant to her socio-economic needs.

As mentioned in the Country Report for the 39th Session of I.C.E., the planned structural change which followed the recommendations made in 1981 by the Presidential Working Party on the Establishment of the Second University, has since taken place and is in its third year of implementation.

In the framework of the 8-4-4 system of education, the following changes have been effected:

(a) The curricula content in both primary and secondary cycles have been diversified and geared much more towards practical subjects. Universities

are currently working on a diversified consolidated curriculum for a basic degree to be covered within a minimum period of 4 years.

(b) The core textbooks for both primary and secondary cycles relevant to the new system have been produced.

(c) Most of the administrative services have been decentralized to the districts to facilitate more efficient supervision in the implementation of programmes.

The 8-4-4 system of education aims at responding to the challenges of national development which call for proper preparation of the youth to facilitate their full participation in the task of national development after completing school. Previous reports on education pointed out that the education system did not respond adequately to the needs of the country and its people. The new system of education aims at redressing this shortcoming. More precisely, its objective is to help the youth to acquire relevant knowledge, skills and attitudes that would enable them to become self-reliant and adaptable to their changing environment upon completion of each educational cycle.

The changes were prompted by the recognition of the fact that for the majority of our students formal eduction would end at either primary or secondary level and it became necessary to give them the kind of education which at each level would provide them with basic scientific and practical knowledge to be utilised for either self-employment, salaried employment or for further training. For this reason, the new education system puts a lot of emphasis on practical-oriented education at all levels. In addition, it has provided a technical education and training component whose objective is to provide training opportunities at both post-primary and post-secondary levels.

New Legislation on Education

Egerton College, established in 1939, continued to expand its role in the development of national agricultural resources by producing practically-oriented front-line extension workers. It underwent a major change on 30 July 1986 when it attained University Constituent College Status through an Act of Parliament, and became a fully-fledged University on 23 December 1987.

The Jomo Kenyatta College of Agriculture and Technology has been upgraded into a Constituent College of Kenyatta University (1988). This will enable the college to upgrade the present technical training programmes, e.g., Technician and Ordinary Diploma courses into University Degree Programmes.

The Council for Licensing of Medical Clinical Officers (Nurses) as Certified Clinical Officers has been established. The legislation will enable this cadre of personnel to be self-employed and provide medical services to more people, especially in the rural areas.

Development of the System

(a) Significant reforms that have been effected in Kenya's education system during the period under review include:

(i) The change from the old system of:
- 7 years primary education
- 4 years 'O' level secondary education
- 2 years 'A' level secondary education
- 3 years basic university education

to the new system of:

- 8 years primary education
- 4 years secondary education
- 4 years basic university education

(ii) A re-organization of the education curriculum with a view to making it more practically-oriented;

(iii) Introduction of the technical and vocational training programmes as a component of the new system of education;

(iv) A re-organization of the management and administrative structure of the education system with a view to realising greater efficiency;

(v) The attached tables show quantitative growth of education and training in Kenya from 1983 to 1987 and 1985 to 1988 respectively.

QUANTITATIVE GROWTH OF EDUCATION IN KENYA 1983-1987

	1983	P/T/R*	1984	P/T/R*	1985	P/T/R*	1986	P/T/R*	1987	P/T/R*
Primary Schools Enrolment	4,322,822	36.7	4,380,232		4,702,414		4,843,432		5,031,340	33.7
Number of Primary Schools	11,966		12,539	37.7	12,936	34	14,437	33.9	13,849	
Number of Primary Teachers	117,705		122,788	138,	384		142,808		149,151	
Secondary School Enrolment	493,710		510,943		437,207		458,712		522,261	
Number of Secondary Schools	2,396		2,396	24.7	2,417	20	2,417	2,592	21.5	
Number of Teachers	18,860	26.1	20,662		21,966		21,183		24,251	
Teacher Colleges Diploma Enrolment	2,899	12	2,900		3,000		2,819		3,258	
Number of Colleges	4		6	11.6	6	11.8	6	6		
Number of Tutors	240		249		255	386	7.3	446	7.3	
Primary Teachers Colleges Enrolment	11,220	17.3	12,604		12,720		12,825		14,475	
Number of Colleges	17		16	17	16	15.6	16	15.6	1616.3	
Number of Tutors	643		738		815		821		886	
University/Colleges Enrolment	9,203		9,057		9,128		10,143		17,538	

P/T/R* - Pupil/Teacher Ration
Source: - Department of Planning, Ministry of Education

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ENROLMENT GROWTH IN POST-SECONDARY TECHNICAL EDUCATING AND TRAINING INSTITUTIONS

Technical Training Institutes (18)	1985	1986	1987	1988
	6,325	6,575	6,838	7,112
(Harambee) Institutes of Technology (17)	4,680	4,867	5,062	5,264
National Polytechnics (3)	5,714	5,943	6,180	6,427
Jomo Kenyatta College of Agriculture and Technology	818	850	885	920
Kenya Technical Teachers College	594	618	642	668
TOTAL	18,131	18,853	19,602	20,391

SOURCE: Ministry of Technical Training and Applied Technology

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ANNEX V

DEPARTMENT OF HOME ECONOMICS
KENYATTA UNIVERSITY

CURRENT CURRICULUM
(to be phased out in 1993)

COURSE DISTRIBUTION/STRUCTURE

		UNITS
FIRST YEAR		
1st Semester		
HE 101	Introduction to Foods and Nutrition	1
HE 102	General Biology for Home Economics	1
HE 103	Microbiology for Home Economics	1
HE 104	Principles of Economics	1
		4
2nd Semester		
HE 105	Introduction to Clothing and Textiles and Art in the Home	1
HE 106	Introduction to Home Management	1
HE 107	Chemistry for Home Economics	1
HE 108	Physics for Home Economics	1
		4
SECOND YEAR		
1st Semester		
HE 201	Principles of Clothing Construction I	1
HE 202	Meal Management	1
HE 203	Household Equipment	1
HE 204	Family Life Education and Childcare	1
		4

		UNITS
2nd Semester		
HE 205	Principles of Clothing Construction II	1
HE 206	Pattern Drafting	1
HE 207	Resource Management	1
HE 208	Housing and Home Furnishings	1
		4

THIRD YEAR

1st Semester		
HE 301	Consumer and Family Economics	1
HE 302	Health, First Aid and Home Nursing	1
HE 303	Community, Nutrition and Dietary survey	1
HE 304	Institution Management	1
		4

2nd Semester		
HE 305	Home Management Living	1
HE 306	Food Science and Experimental Foods	1
HE 307	Costume Design	1
HE 308	Normal and Therapeutic Nutrition	1
		4

ANNEX VI

DEPARTMENT OF HOME ECONOMICS
KENYATTA UNIVERSITY, NAIROBI

PROPOSED 8-4-4 BEd PROGRAMME

RATIONALE

The philosophy of the home economics profession as a family-centered discipline is to help individuals and families become self-reliant by training youth and adults for self-employment and career opportunities in home economics and related occupations. This philosophy has further been strengthened by the introduction of the 8-4-4 educational system which is geared towards technical education for self-reliance at all levels of educational system in Kenya.

To accomplish the objective of the 8-4-4 educational system, the Department of Home Economics at Kenyatta University revised its curriculum to make it more vocational-oriented. Appropriate revisions on previously offered courses were made. In addition, the Department found it necessary to include two other areas of study.

1. Home Economics and Development:

   This course is designed to help graduates of the programme to focus their attention and service not only on classroom teaching, but also on the broader aspects of development. Since the graduates of this programme usually work in high schools and teacher training colleges, the course will help them to prepare for the important roles of promoting national development through rural families as well as urban low-income communities.

   Knowledge and skills that provide viable economic opportunities are offered through a cross-section of courses in home economics and related areas. This course will assist individual students to identify opportunities and promote awareness of alternatives for personal, family and community development.

2. Introduction to Statistics and Research Methods:

   Kenya is putting a lot of emphasis on educational research so as to improve the academic and training programmes. The Department therefore considers statistics and research methods as important research tools which would help the graduates to conduct research as a means of improving education.

The total Home Economics educational programme at Kenyatta University offers a degree comprising the areas of Food and Nutrition, Clothing and Textiles, Child Development, Home Management, Institutional Management, Family Life Education, Health Education, Home Economics and Development, and Research Methods.

Micro-biology, Biochemistry, Science in the Home, Principles of Economics and Curriculum and Instruction and Home Economics are offered in the Department as support courses.

Although the Home Economics educational programme at Kenyatta University is aimed at training high school teachers and tutors for teacher training colleges, the graduates of this programme are employed in other home economics-related occupations such as Food Industry, Clothing Industry and the Ministry of Agriculture as Extension Officers.

Entry Requirements

In addition to satisfying the minimum entry requirement of the Faculty of Education, the candidates must fulfill the following departmental requirements:

1. The candidates must have done at least one of the following categories of subjects at KCSE and passed with a minimum grade of B.

Category A	Category B
- Biology	- Biological sciences
- Chemistry	- Physical sciences
- Home Sciences	- Home Sciences

All students must have done Home Sciences.

2. In special cases, candidates who are holders of a Diploma in Home Economics or its equivalent from a recognized institution may be admitted.

COURSE OUTLINE

		Units
FIRST YEAR		
1st Semester		
HE 100	History and Philosophy of Home Economics	1
HE 101	Science in the Home	1
HE 102	Micro-Biology	1
2nd Semester		
HE 103	Textiles and Art in the Home	1
HE 104	Household Equipment and Technology	1
HE 105	Biochemistry	1
SECOND YEAR		
1st Semester		
HE 200	Principles of Clothing Construction	1
HE 201	Principles of Foods and Nutrition	1
HE 202	Human Growth and Development	1
HE 203	Health Education	1
2nd Semester		
HE 204	Tailoring Techniques	1
HE 205	Principles of Family Resource Management	1
HE 206	Meal Management and Service	1
HE 207	Principles of Economics	1
THIRD YEAR		
1st Semester		
HE 300	Home Management Living	1
HE 301	Housing and Environment	1
HE 302	Pattern Drafting	1
HE 303	Curriculum & Instruction in Home Economics	1
2nd Semester		
HE 304	Family Resource Management Application	1
HE 305	Consumer and Family Economics	1
HE 306	Textile Technology	1
HE 307	Institutional and Personnel Management	1

FOURTH YEAR

1st Semester

HE 400	Scientific Principles in Food Preparation	1
HE 401	Nutrition in Development and Disease	1
HE 402	Garment Design	1
HE 403	Introduction to Statistics and Research Methods	1

2nd Semester

HE 404	Nutrition Assessment and Community Nutrition	1
HE 405	Home Furnishings and Interior Design	1
HE 406	Family Life Education	1
HE 407	Home Economics and Development	1

ANNEX VII

PROPOSAL FOR THE ESTABLISHMENT OF A FACULTY OF HOME ECONOMICS

OPTION: DEPARTMENT OF FAMILY ENVIRONMENT

KENYATTA UNIVERSITY, FACULTY OF EDUCATION
DEPARTMENT OF HOME ECONOMICS

Submitted to the Curriculum Development Committee
of the Faculty of Education
July 1989

PROGRAMME OF STUDY

The curriculum for the undergraduate degree shall extend over not less than 4 academic years. The candidates taking the degree courses will be required to take the prescribed general courses in the Faculty of Home Economics during the first two years. In the 3rd and 4th years the students will specialize in one area chosen from Education, Foods and Nutrition, Institutional Management, Family Environment: Family and Child Studies, and Clothing and Textiles.

COURSE STRUCTURE:

GENERAL COURSES:

1st year:

History and Philosophy of Home Economics
Biology
Chemistry
Principles of Economics
Communication Skills
Family Life Education

Science in the Home
Microbiology
Introduction to Foods and Nutrition
Household Equipment
Textile and Art in the Home
Developmental Studies
Social Ethics

2nd year:

Health Education
Nutrition in the Life Span
Introduction to Home Management
Consumer Economics
Principles of Clothing Construction
Family Resource Management Principles

Teaching Techniques in Home Economics
Meal Management
Pattern Drafting
Human Growth and Development
Principles of Urban and Rural Development
Housing and Home Improvement

DEPARTMENT OF FAMILY ENVIRONMENT (HEFE)

Introduction

In the first and second years, students will take general courses in home economics. In the third and fourth years, students will have two options from which to select their majors:

Option A: Family Environment, which encompasses family and child studies, family resource management and rural development.

Option B: Clothing and Textiles, which encompasses textile science, pattern-making, home furnishing, clothing construction and fashion merchandise.

OPTION A: FAMILY ENVIRONMENT - FAMILY AND CHILD STUDIES

Third Year

1st Semester

HEFE 300	Home Management Practicum
HEFE 331	Family Development
HEED 300	Introductory Statistics
HEED 305	Early Childhood Education
HEFE 332	Family Resource Management Application
HEFE 333	Appropriate Technology

2nd Semester

HEED 303	Pre-school Learning Environment
HEFE 334	Consumer Problems and Issues
HEFE 335	Home Furnishings
HEFE 337	Adulthood and Ageing
HEFE 338	Childbearing Theory and Practice
HEFE 339	Adolescent Development

Fourth Year

1st Semester

HEED 400	Introduction to Research Methods
HEFE 430	Administration of Child Care Centers
HEFE 431	Population and Development
HEFE 432	Women and Development
HEFE 433	Marriage and Family Issues
HEFE 434	Child Development Practicum

2nd Semester

HEFE 435	Family and the Law
HEFE 436	Entrepreneurship in Home Economics
HEFE 437	Human and Social Services Programme
HEED 403	Adult Education
HEFE 438	Home Economics Communications
HEFE 439	Rural Development Practicum

OPTION B: FAMILY ENVIRONMENT - CLOTHING AND TEXTILES

Third Year

1st Semester

HEFE 340	Fiber and Yarns
HEFE 341	History of Textiles and Costume
HEFE 342	Pattern Drafting II
HEFE 366	Home Furnishing
HEFE 343	Family Clothing Consumption
HEFE 344	Seminar in Personal and Social Dimension of Clothing

2nd Semester

HEFE 345	Survey of Textile Industry
HEFE 346	Clothing for Special Needs
HEFE 347	Fabric Construction Techniques
HEFE 348	Textile Science
HEFE 349	Costume Design
HEFE 350	Elective

Fourth Year

1st Semester

HEFE 440	Tailoring
HEFE 441	Design for Living
HEFE 442	Advanced Pattern-Making
HEFE 443	Apparel Analysis and Selection
HEFE 444	Fabric Finishes, Colour and Design Application
HEFE 445	Elective

2nd Semester

HEFE 446	Fashion Merchandise
HEFE 447	Textile Product Use and Evaluation
HEFE 448	Clothing for Special Needs
HEFE 449	Apparel Quality Control
HEFE 450	Experimental Design
HEFE 451	Elective

PROPOSAL FOR THE ESTABLISHMENT OF A FACULTY OF HOME ECONOMICS

OPTION: DEPARTMENT OF HOME ECONOMICS EDUCATION

KENYATTA UNIVERSITY, FACULTY OF EDUCATION
DEPARTMENT OF HOME ECONOMICS

Submitted to the Curriculum Development Committee
of the Faculty of Education
July 1989

PROGRAMME OF STUDY

The curriculum for the undergraduate degree shall extend over not less than 4 academic years. The candidates taking the degree courses will be required to take the prescribed general courses in the Faculty of Home Economics during the first two years. In the 3rd and 4th years the students will specialize in one area chosen from Education, Foods and Nutrition, Institutional Management, Family Environment: Family and Child Studies, and Clothing and Textiles.

COURSE STRUCTURE:

GENERAL COURSES:

1st year:

History and Philosophy of Home Economics
Biology
Chemistry
Principles of Economics
Communication Skills
Family Life Education

Science in the Home
Microbiology
Introduction to Foods and Nutrition
Household Equipment
Textile and Art in the Home
Developmental Studies
Social Ethics

2nd year:

Health Education
Nutrition in the Life Span
Introduction to Home Management
Consumer Economics
Principles of Clothing Construction
Family Resource Management Principles

Teaching Techniques in Home Economics
Meal Management
Pattern Drafting
Human Growth and Development
Principles of Urban and Rural Development
Housing and Home Improvement

DEPARTMENT OF HOME ECONOMICS EDUCATION (HEED)

Introduction

The Department of Home Economics Education prepares students to meet the challenge of teaching home economics within the curriculum of the secondary school. The course focuses upon the identification of human needs and the selection of units related to foods and nutrition, clothing and textiles and family resources management by which they may be satisfied. In the third and fourth year, students will also take a selection of core courses as well as professional courses in education.

Third Year

1st Semester

HEED 300	Introductory Statistics
HEED 301	Curriculum Development
HEED 302	Education Technology
HENI 311	Food Science
HEFE 330	Home Management Practicum
HEFE 342	Pattern Drafting II

2nd Semester

HEED 303	Pre-school Learning Environment
HEED 304	Subject Methods
HENI 316	Experimental Foods
HENI 318	Methods in Nutrition Education
HEFE 346	Clothing for Special Needs
HEFE 349	Costume Design

Fourth Year

1st Semester

HEED 400	Introduction to Research Methods
HEED 401	Educational Foundations
HENI 411	Human Nutrition
HENI 414	Therapeutic Nutrition
HEFE 434	Child Development Practicum
HEFE 440	Tailoring

2nd Semester

HEED 402	Project in Home Economics Education
HEED 403	Adult Education
HEED 404	Educational Psychology
HEED 405	Educational Administration and Planning
HEED 406	Information Technology
HEFE 436	Entrepreneurship in Home Economics

PROPOSAL FOR THE ESTABLISHMENT OF A FACULTY OF HOME ECONOMICS

OPTION: DEPARTMENT OF FOOD, NUTRITION AND INSTITUTIONAL MANAGEMENT

KENYATTA UNIVERSITY, FACULTY OF EDUCATION DEPARTMENT OF HOME ECONOMICS

Submitted to the Curriculum Development Committee
of the Faculty of Education
July 1989

PROGRAMME OF STUDY

The curriculum for the undergraduate degree shall extend over not less than 4 academic years. The candidates taking the degree courses will be required to take the prescribed general courses in the Faculty of Home Economics during the first two years. In the 3rd and 4th years the students will specialize in one area chosen from Education, Foods and Nutrition, Institutional Management, Family Environment: Family and Child Studies, and Clothing and Textiles.

COURSE STRUCTURE:

GENERAL COURSES:

1st year:

History and Philosophy of Home Economics
Biology
Chemistry
Principles of Economics
Communication Skills
Family Life Education

Science in the Home
Microbiology
Introduction to Foods and Nutrition
Household Equipment
Textile and Art in the Home
Developmental Studies
Social Ethics

2nd year:

Health Education
Nutrition in the Life Span
Introduction to Home Management
Consumer Economics
Principles of Clothing Construction
Family Resource Management Principles

Teaching Techniques in Home Economics
Meal Management
Pattern Drafting
Human Growth and Development
Principles of Urban and Rural Development
Housing and Home Improvement

DEPARTMENT OF FOOD, NUTRITION AND INSTITUTIONAL MANAGEMENT (HENI)

Introduction

In the first and second years, students will take general courses in Home Economics. In the third year students will take core courses in the Department. During the fourth year students will have two options from which to select their majors.

Option A: Foods and Nutrition
Option B: Institutional Management

In summary, therefore, first, second and third year courses are the same for all students in this Department. The fourth year differs along the options A and B. The first semester of the fourth year will consist of taught courses in the Department, while the second fourth year semester will be used for practicum and field attachment to institutions and programs within the University catering services and also in catering facilities outside the University.

Third Year

1st Semester

HEED 300	Introductory Statistics
HENI 311	Food Science
HENI 312	Organic Chemistry I
HENI 313	Institutional Equipment
HENI 314	Quantity Food Production
HEFE 330	Home Management Practicum

2nd Semester

HENI 315	Human Anatomy and Physiology
HENI 316	Experimental Foods
HENI 317	Food Preservation Techniques
HENI 318	Methods in Nutrition Education
HENI 319	Organic Chemistry II
HENI 320	Personnel Management

Fourth Year

1st Semester

Option A - Foods and Nutrition

HENI 411	Human Nutrition
HENI 412	Seminar in Foods and Nutrition
HENI 413	Consumer Issues in the Food Industry
HENI 414	Therapeutic Nutrition
HENI 415	Community Nutrition
HENI 416	Biochemistry

Option B - Institutional Management

HENI 411	Human Nutrition
HENI 414	Therapeutic Nutrition
HENI 417	Food Purchasing and Cost Accounting
HENI 418	Principles of Management and Organisation in Food Service
HENI 419	Operational Systems and Management
HENI 420	Science of Catering and Accommodation

2nd Semester

Option A: Students will be attached to community nutrition programmes and an institution, i.e., school, hospital or children's home.

Option B: Students will be attached to an institution, i.e. hospital, hotel or school.